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DISEASES OF THE HEART AND PERICARDIUM

IN WHICH SURGICAL THERAPY MAY BE INDICATED

CLINICAL LECTURE AT ST. LOUIS SESSION

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In most instances of chronic heart disease, the physician is not able to effect a complete cure but is able to prolong life and to make the patient more comfortable. There are, however, some diseases of the heart or of structures which affect the heart indirectly which respond brilliantly to surgical therapy. These conditions constitute only a small percentage of the total but this does not minimize the importance of diagnosing and treating them. For purposes of convenience, heart disease may be divided into the nonsurgical types, in which treatment is usually palliative, and the surgical types, in which a complete cure can often be accomplished. It is with the latter types that this paper is concerned. To be more specific, angina pectoris, thyrotoxic heart disease, abnormalities of the heart associated with pericardial disease and with abnormal communications between systemic arteries and veins and several miscellaneous conditions will be considered from the point of view of possible surgical therapy. Levine [1] stated recently:

> The recognition of the limitations of ordinary medical treatment for many diseases, the lack of specific therapy and the rapid development of surgical technic and newer surgical procedures has brought the general surgeon into contact with problems that not so long ago were entirely confined to the care of the physician. This has been true of practically all the organs of the body. The most recent spheres of surgical interest have been the lungs, the brain and last of all the heart.

ANGINA PECTORIS AND CORONARY SCLEROSIS

The surgical treatment of angina pectoris remains thus far in an unsatisfactory state. The majority of patients with this disease are improved by restriction of activity, avoidance of stress and excitement, reduction of weight in the obese, and the intelligent use of sedatives and of nitrites. One of the several operative procedures should be considered only when these methods have failed and when the patient suffers severe pain while at rest. The choice of surgical therapy may be made from (1) the injection of alcohol about the sympathetic cord and rami of the upper thoracic region, (2) sympathectomy in the same region, (3) total thyroidectomy and (4) attempts to create an increase in the collateral blood supply to the heart. The least harmful of these in most instances is injection of alcohol about the sympathetic cord. It is necessary that the upper thoracic region be included as well as the lower cervical if the desired effect is to be accomplished. The existence of thoracic cardiac nerves which form direct communications between the upper four or five thoracic ganglions and the heart has been demonstrated. Consequently, a direct operative attack on the sympathetic cord in this area is rarely advisable owing to the severity of the operative procedure and to the poor condition of the patient. The injection of alcohol is easier and less dangerous and in most instances accomplishes the same purpose as the sympathectomy. White [2] stated:

> A certain number of failures are unavoidable, due to the technical difficulty of blocking all of the cardiac rami in thick-chested individuals. Under these circumstances recourse may be had to posterior root section with an almost certain expectation of success; provided the patient is in sufficiently good condition to be subjected to so radical a procedure.

If the injection of alcohol seems inadvisable or if it fails, total thyroidectomy may be considered. This procedure is based on the assumption that it is possible to relieve a patient whose diseased heart is incapable of delivering an adequate flow of blood by diminishing the metabolic demands of the tissues. This procedure frequently results in a cessation of the pain. The mechanism of the immediate relief of pain in some instances is a controversial point. Levine and Eppinger [3] made the following comments on total thyroidectomy:

> The results obtained in this study indicate that total thyroidectomy produced specific clinical improvement in cases that were refractory to the ordinary methods of treatment. This seemed to be more definite in those with angina pectoris than in those with congestive heart failure. This operation should be undertaken, however, only after the most careful consideration of the diagnosis and prognosis. Furthermore, it must be evident that ordinary medical management has failed and that the operation is likely to result in improvement that is otherwise unobtainable.

Disadvantages of the procedure include the dangers associated with the performance of any major operation on an ill patient, injury to the recurrent nerves or tetany in a small percentage of cases, and finally the production of myxedema. The initial enthusiasm for this operation appears to be diminishing. Levine [1] stated recently:

> The entire problem of the removal of the normal thyroid gland for intractable heart disease must still be regarded as in the experimental stage. We must patiently but open-mindedly

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1. Levine, S. A.: Clinical Heart Disease, Philadelphia, W. B. Saunders Company, 1936.

2. White, J. C.: Progress in Surgery of the Autonomic Nervous System, Surgery 4:781 (Nov.) 1938.

3. Levine, S. A., and Eppinger, E. C.: Further Experiences with Total Thyroidectomy in Treatment of Intractable Heart Disease, Am. Heart J. 10:736 (Aug.) 1935.

await further developments. It is a drastic procedure not to be undertaken lightly, for it also produces certain ill effects. Alcohol injections, on the other hand, when properly and successfully performed, have no disadvantage comparable to the myxedema resulting from thyroidectomy and at present ought to be preferable, in certain cases, if expert surgical technic can be obtained.

The employment of a new principle in the treatment of coronary disease has been developed as a result of the observations of a number of workers. The effectiveness of pericardial adhesions in conducting blood has been suggested by reports of cases such as that of Thorel,[4] in which chronic adhesive pericarditis together with long-standing obliteration of the right and left main coronary arteries were found without a previous history of cardiac distress. Leary and Wearn [5] have reported cases showing that complete coronary occlusion may not result fatally even in the absence of pericardial adhesions if the process is very gradual. Vascular communications between the coronary system and the fat at the base of the heart were demonstrated by Hudson, Moritz and Wearn.[6] Moritz, Hudson and Orgain [7] demonstrated communications between the coronary system and adhesions to the heart. Beck, Tichy and Moritz [8] showed that a collateral blood supply to the heart can be made available by operation. They stated:

> This vascular bed distributes blood supply to the myocardium and experimentally becomes a mechanism which permits compensation that protects a faltering heart from stopping. It makes possible the maintenance of function despite the occlusion of large coronary trunks.

The tissues which were brought into contact with the myocardium in the different experiments [9] included the pericardium, the pericardial fat, the mediastinal tissues, the adjacent muscles and the omentum. With these experimental and clinical observations as a background, Beck [10] was the first to attempt to increase the blood supply to ischemic heart muscle of patients. The principle employed in these operations is more physiologic than that in the other procedures discussed in that an attempt is made to treat the disease rather than the symptoms.

At the time of his last report (November 1937) Beck [11] had operated on twenty-five patients with coronary sclerosis and intractable angina. The operation consisted of grafting vascularized fat and muscle on the heart. In the more recent operations, powdered beef bone has been placed in the pericardial cavity. Of the twenty-five patients, sixteen are living and nine are dead. Whereas the mortality rate for the first twelve patients was 50 per cent, for the last thirteen it was 15.4 per cent. O'Shaughnessy,[12] of London, has used omentum instead of muscle in an attempt to increase the circulation to the heart. He considers omentum superior to muscle as a vascularizing agent and believes cardio-omentopexy to be a less serious operation than the procedure used by Beck. His results are summarized as follows:

> The cases, twenty in number, are considered in two groups: fifteen suffering from angina pectoris and five from other symptoms of cardiac ischemia. Of the first group, five died, while eight of the remaining ten are free of angina. In the second group there was one death and one is free of symptoms.

The operative procedures consisted of cardio-omentopexy with or without the introduction of aleuronat in thirteen cases, of cardiopneumonopexy with the introduction of aleuronat in two and of the simple insertion of aleuronat into the pericardial cavity in five.

It is believed by some that pericarditis is not a complication of coronary thrombosis but rather represents a natural attempt at healing. It is known that one of the mechanisms by which partial occlusion of a coronary artery is compensated is anastomoses between the right and left vessels. The observations cited suggest strongly that the second most likely collateral pathways are between the heart and the surrounding structures. It is logical to believe that this latter route should be facilitated by adhesions between the heart and the parietal pericardium. Time and additional experiences will probably supply the answer as to whether or not this mechanism can be aided by operative procedures. Since it is known that most of the major arteries of the normal animal can be occluded gradually without a fatality resulting, it is perhaps dangerous to draw conclusions from such observations regarding the treatment of patients with general disease of the arterial system. For this reason the final answer will have to be supplied by continued and additional observations on patients.

Ochsner and DeBakey [13] recently compared the results of treatment of coronary artery disease and pain by paravertebral alcohol block, by total thyroidectomy and by the transplantation of pectoral muscle. The former two were considered successful in slightly more than 80 per cent of the cases. The mortality rate with total thyroidectomy was 3.7 per cent while that with alcohol injection was 1.5 per cent. It should be realized that the average duration of life in anginal patients treated without operation is five years, that most such patients are at an age where life expectancy, even if angina is not present, is not very great, and that conservative therapy properly applied frequently produces marked symptomatic relief. For the present, the several operations with the possible exception of alcohol injection should be regarded as methods of last resort to be employed only when nonoperative means are inadequate.

ARTERIOVENOUS FISTULA

This consideration includes only the direct unnatural communications between arteries and veins. These connections usually result from trauma but they may be congenital in origin. The traumatic ones result most frequently from wounds with a knife or bullet and naturally are particularly apt to be made between vessels encased in a common sheath. The effects of these abnormal communications on the circulatory system have been determined by Holman [14] and others. A large part of the arterial circulation is diverted directly into a vein and it returns to the heart without having

4. Thorel, Charles: Pathologie der Kreislauforgane, Ergebn. d. allg. Path. u. path. Anat. **9**: 671, 1903.
5. Leary, Timothy, and Wearn, J. T.: Two Cases of Complete Occlusion of Both Coronary Orifices, Am. Heart J. **5**: 412 (April) 1930.
6. Hudson, C. L.; Moritz, A. R., and Wearn, J. T.: The Extracardiac Anastomoses of the Coronary Arteries, J. Exper. Med. **58**: 919 (Dec.) 1932.
7. Moritz, A. R.; Hudson, C. L., and Orgain, E. S.: Augmentation of the Extracardiac Anastomoses of the Coronary Arteries through Pericardial Adhesions, J. Exper. Med. **56**: 927 (Dec.) 1932.
8. Beck, C. S.; Tichy, V. L., and Moritz, A. R.: Production of a Collateral Circulation to the Heart, Proc. Soc. Exper. Biol. & Med. **32**: 759 (Feb.) 1935.
9. Beck, C. S., and Tichy, V. L.: The Production of a Collateral Circulation to the Heart: An Experimental Study, Am. Heart J. **10**: 849 (Oct.) 1935.
10. Beck, C. S.: The Development of a New Blood Supply to the Heart by Operations, Ann. Surg. **102**: 801 (Nov.) 1935.
11. Feil, Harold, and Beck, C. S.: The Treatment of Coronary Sclerosis and Angina Pectoris by Producing a New Blood Supply to the Heart, J. A. M. A. **109**: 1741 (Nov. 27) 1937.
12. Davies, D. T.; Mansell, H. E., and O'Shaughnessy, Laurence: Surgical Treatment of Angina Pectoris and Allied Conditions, Lancet **1**: 1 (Jan. 1), 76 (Jan. 8) 1938.
13. Ochsner, Alton, and DeBakey, Michael: The Surgical Treatment of Coronary Disease, Surgery **2**: 428 (Sept.) 1937.
14. Holman, Emile: Arteriovenous Aneurysm: Abnormal Communications Between the Arterial and Venous Circulations, New York, Macmillan Company, 1937.

gone through the capillaries of the part for which it was intended. This results in an increase in the output of the heart in order that the part distal to the fistula may receive sufficient blood for its requirements. As a result of this increased demand on the heart, cardiac hypertrophy and dilatation take place in a high percentage of cases. It is mainly in order to prevent heart failure that operation is indicated.

If one knows that arteriovenous fistulas may occur, there should be little if any difficulty in making a diagnosis. Particularly characteristic are the loud, persistent, continuous, machinery-like murmur and the thrill. These signs disappear if the fistula is in such a position that it may be closed temporarily by pressure. Enlargement of the heart is usually detected by physical signs and x-rays if the fistula has been present for a considerable time. The history of injury clinches the diagnosis in the instances due to trauma.

The ideal operative procedure consists of the closure of the fistulous opening and the restoration of the continuity of both the artery and the vein. Brooks [15] stated:

> It is not always possible to carry out this ideal procedure, and the records of all reported cases for the cure of arteriovenous fistula show such universally good results to follow the extirpation of the segments of vessels containing the fistulous opening that it is perhaps the best method to be used by those not particularly skilled in blood vessel suture.

It is well to remember that simple ligation of the artery or artery and vein usually does not effect a cure. The heart usually returns to its normal size after closure of the fistula. An extremely interesting and unusual report is that of Rienhoff and Hamman [16] of a patient with Streptococcus viridans infection at the site of an arteriovenous fistula. Complete recovery followed the extirpation of the fistula.

THYROTOXIC HEART DISEASE

It is not my purpose in this paper to consider in detail the heart disease which is associated with thyrotoxicosis. Of the several types of chronic heart disease which respond favorably to surgical therapy, this is probably the most common. As has been emphasized by Levine [1] and others, this type is probably the most important of all heart diseases for it comprises the one large group of patients for whom the difference between the right and wrong diagnosis and treatment is the difference between chronic illness or death and health. The severity of the cardiac symptoms is extremely variable. Andrus [17] stated:

> The cardiac manifestations of hyperthyroidism constitute a prominent phase of this syndrome. Yet it is often difficult, sometimes impossible, to correlate the severity of these with the other clinical signs. At one extreme, signs of cardiac failure may be so conspicuous as to mask the concomitant hyperthyroidism; at the other, a patient may perish in the flame of a "thyroid crisis" without symptoms of myocardial insufficiency.

The variations in symptomatology with age and sex should be considered in estimating the status of the thyrotoxic patients. Means [18] stated:

> In the younger patients the nervous symptoms definitely tend to be more in evidence than in the older, whereas in the older the circulatory are more in evidence. Often in the older patients emotional instability is hard to identify and the symptoms and signs are manifestly circulatory.

As regards the influence of sex on the cardiac symptoms, usually these symptoms are more severe in women even though the average age of the men is greater and the severity of the thyrotoxicosis is more marked. It should be remembered that a common diagnostic error with young subjects is to consider thyrotoxicosis present when it is absent, and a common diagnostic error with the elderly is to overlook thyrotoxicosis when it is present. It should be remembered that an elevation in the basal metabolic rate is frequently encountered in congestive heart failure, regardless of the cause. The rate should be redetermined after treatment has resulted in the elimination of as much congestion as possible. It may be wise to determine the effect of morphine on the metabolic rate, as it usually depresses the elevated metabolism of ordinary heart failure but not that of thyrotoxicosis.

Andrus [17] found that the incidence of heart failure was higher in those with toxic adenomas than in those with exophthalmic goiter. This may be due to the greater average age in the former patients. Means [18] found that the incidence of congestive failure among thyrotoxic patients in the Massachusetts General Hospital was 3.9 per cent, of paroxysmal fibrillation 2.8 per cent and of permanent fibrillation 5.2 per cent. This incidence of congestive failure is considerably lower than that in Andrus's series.

A number of theories have been advanced as to the causes of congestive failure in thyrotoxicosis. Hurxthal [19] and Means [18] agree that it is not due to a work hypertrophy of the heart. Hurxthal [19] stated:

> Therefore, in conclusion, we consider the most significant causes of congestive heart failure in hyperthyroidism: (1) age and the coexisting cardiovascular changes associated with it; (2) the specific heart drive incited by thyrotoxicosis; (3) auricular fibrillation; (4) duration and intensity of thyroid overactivity.

Andrus [17] stated that the metabolic alterations in the myocardial tissue in hyperthyroidism render this work abnormally expensive and this may result in cardiac failure in persons whose circulatory reserve has been diminished by age or preexisting heart disease. Maher and Sittler [20] believe that thyrotoxicosis makes evident latent cardiovascular lesions which resume their latency after successful treatment of the thyroid disease. According to Means: [18]

> Cardiac insufficiency in the course of toxic goiter is looked upon as the result, in most instances at least, of thyrotoxicosis upon an already diseased heart. The weight of evidence favors the view that excess of thyroid hormone even over long periods does not specifically injure the myocardium. It may through depleting it of glycogen make it more vulnerable to other evil influences. It is recognized that, in the older patients particularly, thyrotoxicosis may cause fibrillation and that long continued heart fibrillation may lead to heart failure. The recent work of Weiss introduces the possibility that in the malnourished cases avitaminosis B may play a role in any heart failure which may be present.

The preoperative preparation of patients with cardiac symptoms associated with thyrotoxicosis is unusually important. The treatment may include rest, sedatives, digitalis if edema and dyspnea are present, and of course

15. Brooks, Barney: The Treatment of Traumatic Arteriovenous Fistula, South. M. J. **23**: 100 (Feb.) 1930.
16. Rienhoff, W. F., Jr., and Hamman, Louis: Subacute Streptococcus Viridans Septicemia Cured by Excision of an Arteriovenous Aneurysm of the External Iliac Artery and Vein, Tr. Am. S. A. **52**: 417, 1935.
17. Andrus, E. C.: Clinical and Experimental Observations upon the Heart in Hyperthyroidism, Tr. A. Am. Physicians **47**: 47, 1932.
18. Means, J. H.: The Thyroid and Its Diseases, Philadelphia, J. B. Lippincott Company, 1937.
19. Hurxthal, L. M.: Heart Failure and Hyperthyroidism, with Special Reference to Etiology, Am. Heart J. **4**: 103 (Oct.) 1928.
20. Maher, C. C., and Sittler, W. W.: The Cardiovascular State in Thyrotoxicosis, J. A. M. A. **106**: 1546 (May 2) 1936.

compound solution of iodine. Concerning the use of quinidine, Lahey and Hurxthal [21] stated:

> No attempt is ever made to convert auricular fibrillation to normal rhythm by the use of quinidine until after the operation. Then in selected cases quinidine is administered but never earlier than five days after the last operative procedure. If normal rhythm in hyperthyroidism be restored preoperatively by quinidine, auricular fibrillation will frequently reappear as the result of the postoperative toxic reaction and thus the quinidine be wasted.

The treatment of thyrocardiac patients is discussed by Harrison [22] as follows:

> Therapy in such cases should be directed primarily toward the underlying metabolic disturbance, but in addition the congestive phenomena should be treated in the usual way. Ordinarily it is unwise for thyroidectomy to be done until the manifestations of decompensation have been overcome. Some authors believe that digitalis should not be administered to patients with hyperthyroidism and it is true that tachycardia does not constitute an indication for the drug. However, congestive failure does constitute such an indication, and although here as in other types of cardiac disease digitalis may fail, it frequently produces gratifying results. While congestive heart failure is being treated, iodine should be administered in the usual way. Whether or not the measures which have been mentioned produce clinical improvement, the patient should be subjected to thyroidectomy, because conservative nonoperative treatment is rarely efficacious in severe cases, although it is very beneficial as a preliminary measure previous to operation.

The use of bromides for these patients, particularly the aged, is attended with a great deal of danger. Most important in the surgical treatment is the removal of a sufficient part of the thyroid, leaving only a small amount at each posterior capsule. Myxedema is a rare sequel but inadequate removal with recurrence occurs not infrequently. In regard to this point, Lahey and Hurxthal [21] stated:

> When insufficient removals are done and hyperthyroidism persists, these patients, who at best are hazardous risks, must be submitted again to a doubly hazardous procedure and where repeated operations are done, particularly those upon recurrent hyperthyroidism which makes them technically difficult, the mortality will of necessity be further elevated.

They found that thyroidectomy resulted in a restoration of cardiac compensation in 95 per cent of their cases and in an abolition of auricular fibrillation in 72 per cent of the patients who had this abnormality.

PERICARDIAL DISEASE

In this paper I am concerned in the main with more or less chronic heart disease, but a few remarks will be made concerning the effects of acute intrapericardial pressure, as this sometimes progresses into chronic compression of the heart. The clinical manifestations of acute intrapericardial pressure may be produced by any agency which results in the rapid accumulation of blood, fluid or air, sterile or infected, in the pericardial cavity. The most important signs on physical examination may include a moderate prominence of veins and an increase in the venous pressure, a paradoxic pulse, tachycardia, a small pulse pressure and, most helpful of all in diagnosis, an absence or suppression of the pulsations of the heart on fluoroscopic examination. There is very little increase in the size of the heart-pericardial area on x-ray and physical examination. If the increase in intrapericardial pressure persists for a number of days, the pericardium becomes larger and the superficial veins become more prominent. X-ray examination at this time reveals a marked increase in the size of the heart-pericardial area. If the accumulation of fluid or pus continues over a period of weeks or months, ascites, edema, pleural effusion and an enlarged liver are to be noted.

That wounds of the heart are of rather frequent occurrence is shown by the fact that Elkin [23] has reported twenty-two of these and Bigger [24] has reported seventeen in approximately an eight year period. However, operation is not always necessary, as is demonstrated by the experience of Turner [25] at Meharry, who last year treated successfully three patients by aspiration alone after sufficient time had elapsed for the bleeding to stop. Bigger [26] stated that aspiration is indicated for patients who show a satisfactory response to nonoperative therapy such as the intravenous injection of fluid. The treatment of cardiac tamponade due to hemorrhage consists usually of opening the pericardium and of suturing the wound in the heart. The treatment of pyogenic infections of the pericardium consists of drainage after a definite diagnosis has been made. Accumulations of fluid which are nonpyogenic in origin should not be drained except in very occasional instances. If the tamponade becomes very marked, aspiration should be performed. The results following the drainage of tuberculous pericarditis associated with the accumulation of a large quantity of fluid are bad. In some instances, and this is particularly true in infections due to the tubercle bacillus and to the staphylococcus, the fluid is slowly absorbed and is replaced by a dense scar involving the pericardium and epicardium.

During the past eleven years, forty-three patients strongly suspected of having or proved to have tuberculosis of the pericardium have been admitted to the Vanderbilt University Hospital.[27] Most of those whose illness was chiefly caused by pericarditis were more than 40 years of age. A positive diagnosis was made as a result of aspiration, operation or autopsy on twenty-five patients. The pericardium of two of these patients was drained during the acute stage under the mistaken impression that there was a pyogenic infection, and these patients died a number of weeks later. The only patients in this group who are living are four of those on whom pericardiectomy was performed after the fluid disappeared and a more chronic stage of the disease was reached. However, some activity was still present. This is not meant to imply that all patients with tuberculous pericarditis die unless operation is performed. Tuberculous pericarditis was strongly suspected but not proved for the remaining eighteen patients, who were in general less ill than the others. Eight of these are dead, four are free of symptoms and the remaining six are wholly or partially incapacitated. Certainly the mortality rate is high.

As stated, infections with the tubercle bacillus and Staphylococcus aureus are particularly apt to result in chronic constrictive pericarditis with compression of the heart. In fact, all pyogenic infections of the cavity which are not drained are apt to result in this condition. Following drainage of the pericardium for a pyogenic infection, constrictive pericarditis has resulted once in

21. Lahey, F. H., and Hurxthal, L. M.: Postoperative End Results in Three Hundred Thyrocardiacs, Am. J. Surg. 94:225 (May) 1934.
22. Harrison, T. R.: Failure of the Circulation, Baltimore, Williams & Wilkins Company, 1935, p. 313.
23. Elkin, D. C.: The Diagnosis and Treatment of Wounds of the Heart: A Review of Twenty-Two Cases, J. A. M. A. 111:1750 (Nov. 5) 1938.
24. Bigger, I. A.: Heart Wounds: A Report of Seventeen Patients Operated upon in the Medical College of Virginia Hospitals and a Discussion of the Treatment and Prognosis, J. Thoracic Surg. 8:239 (Feb.) 1939.
25. Turner, E. L.: Personal communication to the author, 1939.
26. Bigger, I. A.: The Indications for Surgery in Lesions of the Heart and Pericardium, J. South Carolina M. A. 34:147 (June) 1938. Footnote 24.
27. Blalock, Alfred, and Levy, S. E.: Tuberculous Pericarditis, J. Thoracic Surg. 7:132 (Dec.) 1937.

the experience of my co-workers and me and twice in that of Bigger.[28] Rheumatic infection has not been the etiologic agent in our experience [29] and in that of White [30] and Churchill.[31] Chronic constrictive pericarditis may be defined as thickening and contraction of the pericardium or epicardium or both with the result that the heart cannot carry out its functions competently. Usually the pericardial cavity is entirely obliterated but in some instances there are small areas in which the two surfaces are not adherent. Calcification may be present or absent. The major disturbance in cardiac function results from the inability of the heart to dilate during diastole and hence its inability to receive enough blood to propel. Atrophy of the heart muscle frequently results in disease of long duration. This disease was recognized many years ago but only recently have its frequency and response to treatment been appreciated. Churchill [31] stated in 1929 that there were only thirty-seven cases throughout the world in which pericardiectomy had been performed. Since that time, a greater total of operations than this have been carried out in three clinics in America.

In association with Dr. C. S. Burwell and others I have observed twenty-two patients with an undoubted diagnosis of constrictive pericarditis in the Vanderbilt Hospital in the past ten years. Most of them complained of weakness, dyspnea on exertion, an enlarged abdomen, cough and edema. Physical examination usually disclosed prominent veins, elevated venous pressure, peripheral edema, an enlarged liver, ascites, pleural effusion, paradoxic pulse, low pulse pressure, tachycardia and a quiet heart which was relatively small and which exhibited little if any pulsation under the fluoroscope. The great degree of systemic congestion was out of proportion to the moderate amount of dyspnea. The tubercle bacillus was the etiologic agent in most of these cases. The majority of patients for whom the scar was removed from a large part of the right and left ventricles are greatly improved or cured. The prognosis is better for patients with nontuberculous disease. It is necessary to perform a pericardiectomy in some instances in the presence of an unhealed scar due to tuberculosis if signs of compression increase despite the fact that the fluid has disappeared from the pericardial cavity.

MISCELLANEOUS CONDITIONS

A form of heart disease comparatively rare except in infants is that which is associated with congenital abnormalities. The musculature is usually essentially normal but the valves or chambers of the heart or the large blood vessels are constructed improperly. The abnormalities of the heart are usually multiple and the physical signs may not be sufficiently distinctive for proper differentiation. As pointed out by Munro,[32] the type of abnormality which would be expected to respond most favorably to operation is the patent ductus arteriosus, and he described the technic for this procedure in 1907. Abbott [33] described the postmortem observations on ninety-two patients with this condition who had no other complicating congenital abnormalities. Most of the deaths were due to heart failure and to bacterial endocarditis. The first attempt at obliteration of a patent ductus was reported by Strieder in 1937.[34] The patient had subacute bacterial endocarditis. Death occurred on the fourth postoperative day as a result of acute dilatation of the stomach. Gross and Hubbard [35] reported very recently the first successful instance of ligation of the ductus arteriosus. Dramatic improvement occurred in this child of 7 in whom cardiac hypertrophy was taking place. Since heart failure, bacterial endocarditis and pulmonary tuberculosis are common complications of patent ductus arteriosus and since the correction of the deformity is founded on sound principles, it is likely that additional patients will be benefited by ligation of the duct. Unfortunately, this abnormality is often associated with others and it is possible to harm rather than help the patient by occlusion of the duct.

A common disease of the heart is associated with deformities of the valves. Such deformities may cause a regurgitation of blood through the valves when they should be closed or an impediment to the flow when they should be open. The attempts by operative means to benefit patients with mitral stenosis, although brilliant in concept and in execution, have not been encouraging. The valves may be modified but not reconstructed. Perhaps congenital pulmonary stenosis of the membranous type offers the best possibility for a successful surgical attack. At any rate, the surgical treatment of valvular disease has not progressed beyond the experimental stage.

Mediastinopericarditis is associated with a large heart in contrast to the smaller heart seen in constrictive pericarditis, and there is usually a visible systolic retraction of the precordial area. An operation which consists simply of removal of some of the bony parts overlying the heart has apparently resulted in improvement in a number of cases. On this point, however, there is a difference of opinion and Beck [36] believes that this procedure has no place in cardiac surgery. I am inclined to agree with the opinion of Bigger: [28]

> . . . while adhesions between the epicardium and pericardium alone do no particular damage, such adhesions when associated with fixation of the pericardium to the chest wall or diaphragm do add a great burden to the heart, producing hypertrophy and dilatation, and eventually failure. Admittedly, such cases are rare, but when correctly diagnosed they may be relieved by this simple procedure.

Graham and his associates [37] are of the opinion that decompression by the removal of ribs and cartilages is indicated in a few of the cases with great enlargement of the heart. The mere bulk of the heart and not the presence of adhesions is the chief feature in these cases. A somewhat similar operative procedure may be indicated in cases with pectus excavatum.

Extracardiac conditions such as thoracic tumors that produce pressure on the heart or great vessels may exert deleterious effects. Even the tumors benign from a cellular point of view may be malignant by virtue of position. The treatment consists of removal when this is feasible. Tumors and cysts of the heart and pericardium are rare but are by no means unknown. A number of different factors should be considered in determining whether or not removal should be attempted. The same is true in instances of foreign

28. Bigger, I. A.: Personal communication to the author, 1938.
29. Burwell, C. S., and Blalock, Alfred: Chronic Constrictive Pericarditis, J. A. M. A. **110**: 265 (Jan. 22) 1938.
30. White, P. D.: Chronic Constrictive Pericarditis (Pick's Disease) Treated by Pericardial Resection, Lancet **2**: 539 (Sept. 7) 1935.
31. Churchill, E. D.: Decortication of Heart (Delorme) for Adhesive Pericarditis, Arch. Surg. **19**: 1457 (Dec.) 1929.
32. Munro, J. C.: Ligation of the Ductus Arteriosus, Ann. Surg. **46**: 335, 1907.
33. Abbott, Maude E.: Atlas of Congenital Heart Disease, New York, American Heart Association, 1936, pp. 60-61.
34. Strieder, J. W.: Discussion of Papers on Cardiac Surgery, J. Thoracic Surg. **7**: 151 (Dec.) 1937.
35. Gross, R. E., and Hubbard, J. P.: Surgical Ligation of a Patent Ductus Arteriosus: Report of First Successful Case, J. A. M. A. **112**: 729 (Feb. 25) 1939.
36. Beck, C. S.: Acute and Chronic Compression of the Heart, Am. Heart J. **14**: 513 (Nov.) 1937.
37. Graham, E. A.; Singer, J. J., and Ballon, H. C.: Surgical Diseases of the Chest, Philadelphia, Lea & Febiger, 1935, p. 300.

bodies in the heart and pericardium. Beck [38] is of the impression that a plastic procedure in the nature of a graft of fascia or pericardium is indicated for some patients with contusions of the heart.

SUMMARY AND CONCLUSIONS

At the present time there are relatively few indications for the employment of surgical procedures in the treatment of angina pectoris.

A number of patients give evidence of congestive heart failure associated with thyrotoxicosis, pericardial disease and arteriovenous fistula for which surgical therapy is usually indicated. Although these patients constitute only a small proportion of those with heart disease, the results of surgical treatment are usually so satisfactory that these conditions should be kept in mind.

TUBERCULOSIS IN HOSPITAL PERSONNEL

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The medical profession has long been familiar with the fact that many persons have tuberculous lesions of the lungs which appear, regress and heal without ever giving rise to symptoms or physical signs. Only recently has this fact assumed significance for the practitioner. Formerly asymptomatic tuberculosis passed undetected until, in the course of postmortem examinations, these old healed lesions were revealed to the pathologist. The clinician's experience was limited to frank clinical tuberculosis because diagnostic methods were not sufficiently refined to reveal minimal lesions.

Today roentgenology has developed to the point at which some of these symptomless lesions are visualized from the time of infection to complete healing. As a result the clinician now has evidence of both (*a*) the preclinical stages of early tuberculosis and (*b*) the asymptomatic lesion which will heal without ever giving rise to clinical disease. The lesions of clinical tuberculosis appear in less than 2 per cent of the population, while the lesions which heal without clinical signs occur in many persons and vary according to race, social and economic status and other factors. This extension of the diagnostic horizon has had far reaching effects on the prevention and treatment of tuberculosis as well as in coloring reports on morbidity. In this paper only the effect on reported morbidity will be considered.

The incidence of tuberculosis as now revealed by roentgenographic case finding includes both those cases in which there is a lesion which will run a benign course and those in which there is a minimal lesion of early clinical disease. When roentgenograms are not used for case finding, incidence includes only clinical tuberculosis. The difference between the two in the reported morbidity is large. For example, at the University of Wisconsin the first year after the introduction of roentgenologic case finding methods the reported incidence of tuberculosis was increased 430 per cent over the average for the previous fourteen years.[1] Another example is reported by Ferguson.[2] Among 20,000 university students at institutions where some type of case finding program exists the reported incidence is six times that among 70,000 students in otherwise similar institutions but which have no case finding routines. In the Metropolitan Life Insurance Company,[3] which provides a case finding program by annual fluoroscopic or roentgen examination of all its employees, among women between the ages of 20 and 24 the annual incidence of new tuberculosis is four in each thousand employees. Among the employees of the New York Telephone Company [4] with no case finding program but with complete diagnostic service, the reported annual incidence of new pulmonary tuberculosis is less than one in each thousand women.

These data demonstrate that a variation in the reported tuberculosis incidence for two groups does not necessarily indicate a difference in actual morbidity but usually reflects differences in case finding technics. The technics employed range from those groups which have no case finding program whatever to those having tuberculin tests with two or more chest films a year. Comparison of the incidence of tuberculosis found by such extremes in examination methods is analogous to comparison of the incidence of syphilis found in a group on physical examination with that found in a group having annual serologic tests. Studies of comparative morbidity can yield valid conclusions only when limited to incidence determined by similar case finding procedures. Disregard of the effect of case finding technic can lead to nothing but confusion—a fact amply illustrated by the literature on the incidence of tuberculosis among hospital personnel.

The idea that tuberculosis was less common among hospital personnel than among the general population prevailed for many decades. Sixty years ago Williams [5] reported: "In the care of 15,662 tuberculous patients at the Brompton Hospital for Consumption in London, over a period of twenty years not a single case of pulmonary disease developed among the physicians and the hospital personnel in spite of the worst hygienic conditions." Nurses in those days were older and semiskilled in contrast to the professional trained women of today. Under modern conditions at Trudeau Sanatorium,[6] where many advanced cases are under treatment, no case of pulmonary tuberculosis developed in forty-five years among hundreds of employees.

Heimbeck,[7] of Norway, aroused new interest in the subject when he reported the development of tuberculosis in 155 of his nurses in the course of 5,364 observation years, an incidence higher than that reported by any one before or since. A number of American and Canadian observers have also reported a high incidence of tuberculosis among student nurses.[8]

38. Beck, C. S.: Contusions of the Heart, J. A. M. A. **104**: 109 (Jan. 12) 1935.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 18, 1939.

1. Stiehm, R. H.: Tuberculosis Among University of Wisconsin Students, Am. Rev. Tuberc. **32**: 171-182 (Aug.) 1935.

2. Ferguson, L. H.: A Study of College Students, J. Outdoor Life **31**: 299-301 (Aug.) 1934.

3. Fellows, H. H.: Personal communication to the author.

4. McSweeney, Edward S.: Personal communication to the author.

5. Williams, quoted by Mücke, H.: Die Tuberkulose des Pflegepersonals, Beitr. z. Klin. d. Tuberk. **64**: 115-179 (Jan.) 1926.

6. Baldwin, E. R.: Danger of Tuberculous Infection in Hospitals and Sanatoria, U. S. Vet. Bur. M. Bull. **6**: 1-4 (Jan.) 1930.

7. Heimbeck, Johannes: Immunity to Tuberculosis, Arch. Int. Med. **41**: 336-342 (March) 1928; Tuberculosis in Hospital Nurses, Tubercle **18**: 97-99 (Dec.) 1936.

8. These include:
Bow, M. R.: Physical Examination of Nurses, Before and During Employment, Canad. Pub. Health J. **28**: 63-66 (Feb.) 1937.
Geer, F. K.: Tuberculosis Among Nurses, Arch. Int. Med. **49**: 77-87 (Jan.) 1932.
Gordon, Burgess, and Cashman, W. M.: Tuberculosis in Workers After Residence in a Tuberculosis Hospital, J. A. M. A. **94**: 1643 (May 24) 1930.
Jones, D. W. C.: An Inquiry into the Incidence of Tuberculosis in a New Zealand Hospital, Tubercle **15**: 59-67 (Nov.) 1933.
O'Hanlon, George: Health Programs for Nurses and Employees, Bull. Am. Hosp. A. **9**: 112-118 (Jan.) 1935.
Shipman, S. J., and Davis, E. A.: Tuberculosis and Tuberculous Infection Among Nurses, Am. Rev. Tuberc. **27**: 474-487 (May) 1933.
Myers, J. A.; Trach, Benedict; Diehl, H. S., and Boynton, Ruth E.: Tuberculosis in Medical, Nursing and Hospital Personnel, Ann. Int. Med. **11**: 2181-2205 (June) 1938.
Amberson and Riggins.[9] Badger and Spink.[9] Welborn.[9]

In five nurses' training schools in New York City from September 1935 to March 1939 there were 2,085 nurses enrolled for periods of from a few months to three years. Semiannual roentgenograms were taken. Twenty-two new pulmonary lesions were found on films—an annual incidence of 6.7 per thousand nurses.

When the rate of tuberculosis among student nurses is compared to that among groups outside the hospital, it is necessary to remember that among women at this age (18 to 24) there is more tuberculosis than at any other age.[9] For women, the peak of mortality from pulmonary tuberculosis (chart 1) is in the 20-24 year age group, indicating a peak of morbidity at about 20 years of age, which is the average age of student nurses. One must therefore expect a higher incidence than among older or younger women. A higher incidence is expected than among women of the same age who are not under as efficient a case finding program. The insurance company conducts annual fluoroscopic examinations. Because our nurses' case finding method consisted of roentgenograms taken twice a year we expect to find an incidence higher than 4 per thousand.

Fortunately, we can refer to groups of students of about the same age as our student nurses who have likewise had periodic roentgen examinations.[2] In colleges where case finding methods prevail, the annual incidence among women varies from 3.1 to 12.7 per thousand; for the whole group it is 7.5. The annual rate in the five training schools on which I am reporting is 6.7 per thousand. Thus, if all conditions are taken into consideration—if comparisons are properly made—student nurses do not show a higher tuberculosis morbidity. But if the number of our student nurses with tuberculosis is divided into those who were tuberculin positive on entry and those who were tuberculin negative, it is found that the incidence among the originally negative is six times the positive. In other words, the tuberculin positive nurses have a lower tuberculosis rate than similar groups outside of hospitals, while the tuberculin negative nurses have a higher rate.

Studies of tuberculosis are less numerous among graduate nurses than among students, and most of the reports, in contrast with those on student nurses, do not show a greater morbidity among graduate nurses than among the general population.[10]

The municipal hospitals of New York City employ 5,000 graduate nurses with an estimated annual turnover of 1,000. In a three and a half year period, forty-one cases of tuberculosis were discovered. Until this study was under way about two years, preemployment films were not taken on all graduate nurses, so that this number probably includes some preexisting lesions. This annual incidence of 2.4 per thousand is about the same as the incidence among similar groups of women outside of hospitals.

In the New York municipal hospitals there are 753 interns in service. In three and a half years five interns with negative films on beginning service showed evidence of pulmonary tuberculosis. Four of these were at the largest single institution with 155 interns, where they are most diligently examined, and there was only one in all the other eighteen institutions in which 598 interns were engaged. A sixth lesion became manifest three months after the conclusion of the doctor's service at the largest institution mentioned.

As far as I know, none of the nurses became tuberculous after the observation ended. After employees leave the institution—though they continue contacts with patients—they are no longer examined periodically, and the reported incidence drops to a minimum; in fact, it drops below the expected incidence for that age-sex group in the general population in which no case finding program is maintained.

Among the porters, maids and hospital attendants in the municipal institutions, about 3,000 have some contact with patients. The women slightly outnumber the men. In three and a half years there have been eleven cases of pulmonary tuberculosis among these employees. The distribution of this morbidity among the various hospitals bears no relation to the amount of contact with tuberculous patients. In a semiskilled group this incidence is certainly not higher than that in similar groups outside of hospitals.

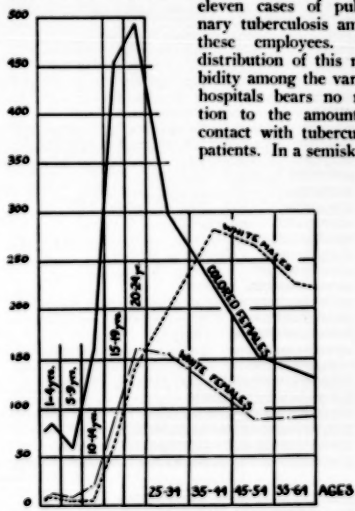

Chart 1.—Average annual death rates per hundred thousand, showing that the maximum mortality for women with pulmonary tuberculosis is in the age group of student nurses, based on figures from the industrial department of the Metropolitan Life Insurance Company, 1911-1933.[9]

To return to a consideration of the symptomless transient lesions of the lungs found solely on roentgen examination, some of these represent the fresh primary lesion—the first infection for that individual. This roentgen evidence is found in only one out of five persons who are infected and may be seen some weeks after infection takes place. In the great majority of children and adults the primary lesion gives no evidence of its presence even on the roentgenogram, but one can infer its presence somewhere in the body only because the individual has become allergic to tubercle bacillus protein, as demonstrated by a Pirquet or Mantoux test. When a roentgenogram shows this primary lesion soon after the infection takes place, it can be differentiated only with difficulty from minimal clinical (secondary) tuberculosis. Some workers consider an

9. Dublin, L. I., and Lotka, A. J.: Twenty-Five Years of Health Progress, New York, Metropolitan Life Insurance Company, 1937, pp. 99-104.

10. Welborn, M. B.: Incidence of Tuberculosis Among the Personnel of the College of Medicine and the Cincinnati General Hospital, J. Med. **38**: 563-566 (Jan.) 1938. Mariette, E. S.: The Tuberculosis Problem Among Nurses in a Tuberculosis Sanatorium, Tubercle **18**: 103-125 (Dec.) 1936. Pollock, W. C., and Forsee, J. H.: Reinfection Among Tuberculo-Allergic Doctors and Nurses at Fitzsimons Hospital, Am. Rev. Tuberc. **31**: 203-216 (Feb.) 1935. Ulmar, D.; Ornstein, G. G., and Epstein, H. H.: Pulmonary Tuberculosis as an Occupational Disease in a Tuberculosis Hospital, Quart. Bull. Sea View Hosp. **2**: 49: 68 (Oct.) 1936. Badger and Spink.[5]

active primary infection no more indication for treatment than a recently acquired allergy to tuberculin.[11] More than 95 per cent of the population in a great city acquire the primary lesion and are not aware of it. When accidentlly found on chest films years later it is usually easy to differentiate between these old lesions and the shadows of early clinical disease. These primary lesions are of great importance in a statistical study. Obviously no fresh primary lesions will come to light, no matter how often roentgenograms are made among persons tuberculin positive at the beginning of the observation period. However, a group of tuberculin negative persons who have periodic roentgenograms made will always show some fresh primary lesions. The greater the number of negative tuberculin reactors in the group observed, the greater also will be the apparent morbidity, if all fresh primary lesions

Chart 2.—Pulmonary tuberculosis: 1930 death rates in males from 16 to 64 years of age; death rates standardized according to age distribution of gainfully occupied males in ten selected states (Alabama, Connecticut, Illinois, Kansas, Massachusetts, Minnesota, New Jersey, New York, Ohio and Wisconsin).

of the lung are included. Some student nurses reach the age of enrolment without having acquired the primary lesion of tuberculosis. These nurses may acquire these lesions during the training period. It is for this reason that a case finding program increases the number of lung shadows found in this group more than in any other group in a hospital. However, one may wish to compare the incidence of all new lung shadows. If so, student nurses must be compared with other groups of young women from a similar social-economic class and similarly drawn from both urban and rural districts—for example, college students, among whom the annual incidence is 7.5 per thousand.

The reports from different hospitals vary but they show that from 30 to 66 per cent of nurses are negative on beginning their training and that more than 90 per cent are positive at the end of the three year training period. Amberson and Riggins[12] found that 47 per cent of the nurses at the largest of the five training schools here reported give negative reactions to tuberculin on enrolment. Heimbeck[7] found that 52 per cent and Badger and Spink[13] that 44 per cent of the nurses gave negative reactions. That the roentgen shadows discovered are chiefly those of primary tuberculosis is shown by the fact that in Badger and Spink's series only one of 162 nurses positive on enrolment but seven of 111 negative on enrolment showed a lung shadow. Amberson and Riggins found two nurses with tuberculosis among the 150 who were positive and six among the 143 who were negative on enrolment. Heimbeck found only three nurses with tuberculosis among 200 who were positive and forty-eight among 220 who were originally negative. Of the twenty-two student nurses here reported on, whose roentgenograms showed parenchymal lesions, seventeen were negative reactors, three were positive reactors and two gave uncertain reactions.

In general, the incidence of lesions on roentgenograms is six times as high among students negative on enrolment as among positive reactors. It appears significant that the incidence of reported tuberculosis among college students under roentgenologic case finding and students not under a case finding program also shows a proportion of 6 to 1. Considering only the positive reactors among the student nurses, the incidence of tuberculosis is no higher, in fact it is lower, than that of the same age group in the general population in which no case finding examinations are made. Most adults will probably acquire the primary infection some time during the first decade of residence in the city. The evidence indicates that pupil nurses will acquire it more quickly, probably within the three year training period.[14]

Until now I have not referred to the well known, dreadfully high incidence of pulmonary tuberculosis among Negroes. Chart 1 indicates what must be expected among young Negro women—a rate three times as high as is exhibited by white women. One of the five training schools included in this report is the Harlem Hospital Nurses Training School, where 250 Negro student nurses have been under observation for periods varying from a few months to three years.

If it is true that a roentgenologic case finding program uncovers many primary transient lesions, one can expect that high incidence of tuberculosis among young Negro women will affect our studies of pulmonary lesions among these student nurses in two opposite ways:

1. A higher incidence of clinical secondary tuberculosis is expected because women of that age and race generally have a high incidence.

2. Most of the Negro nurse matriculants, having been born and having grown up among people where tuberculosis is so common, will have acquired a primary infection long before reaching the age of enrolment. A fresh primary lesion of tuberculosis will therefore seldom be found to increase the incidence figures. Because of this one expects a lower reported incidence.

Which of these two factors will predominate? Should a higher incidence be expected because of race or should a lower incidence be expected because there will be a few primary infections of tuberculosis? It

11. Myers, J. A.; Ch'iu, P. T. Y., and Streukens, T. L., Jr.: Primary Infection in Adults, Am. Rev. Tuberc. **39**: 232-235 (Feb.) 1939.

12. Amberson, J. B., and Riggins, H. M.: Tuberculosis Among Student Nurses, Ann. Int. Med. **10**: 156-165 (Aug.) 1936.

13. Badger, T. L., and Spink, W. W.: First Infection Type of Tuberculosis in Adults, New England J. Med. **217**: 424-431 (Sept. 9) 1937.

14. Boynton, Ruth E.: The Incidence of Tuberculous Infection in Student Nurses, Am. Rev. Tuberc. **39**: 670-674 (May) 1939.

is an interesting speculation; I hope that the reader will make his guess before reading further.

Each of these Negro pupil nurses serves for a few weeks in a tuberculosis sanatorium. At the Harlem Hospital most of the patients are Negroes. This is an institution for acute conditions where serious injuries and other surgical emergencies require prompt attention; where acute cardiac decompensation, pneumonia and other medical emergencies are the normal routine. Here patients must be cared for and treated for the acute conditions without an attempt being made to diagnose preexisting ailments such as tuberculosis. It is only after the patient begins to recover from his acute condition or at the postmortem examination that the physician becomes aware of the presence of active pulmonary tuberculosis. I know of no institution where nurses are more exposed to tuberculosis. Nevertheless, in this institution there is no tuberculosis among the pupil nurses. The incidence of pulmonary tuberculosis among the Negro student nurses over a period of three and a half years is zero—not a single case was found. I am fully aware of the fact that the absolute zero is an accidental finding for, of course, there will eventually be found some cases of clinical tuberculosis as the years go by, but it is strong evidence that much of what is being found among white student nurses is not the beginning of clinical tuberculosis, not the activation of older lesions, not exogenous reinfections but rather a large number of primary lesions.

This number of Negro nurses is small and three and a half years is a brief period of observation; nevertheless the results dramatize this paradox of reported incidence of tuberculosis with a periodic roentgenographic case finding program after a first healthy chest film; the higher the incidence of tuberculosis among the people from which a group of adults comes, the lower the incidence of new lung shadows discovered. The incidence of clinical tuberculosis, which becomes manifest without a roentgenologic case finding method, shows no such paradox.

The knowledge that certain persons have the shadows of primary pulmonary lesions is of importance solely from the standpoint of epidemiologic studies. For the individual it is better if he never knows that this transient pulmonary lesion existed. But few of us who have had such a transient lesion ever knew about it and we are happier because of our ignorance. On the other hand, it is of the utmost importance to the individual as well as to the community—from the standpoint both of treatment and of prevention of spread of the disease—that the early lesion of clinical tuberculosis be assiduously sought. Diagnostic differentiation is difficult, often impossible, and outside the scope of this paper.

I hope that the evidence presented in this paper has made it clear that clinical tuberculosis does not develop in interns, graduate nurses and other members of the hospital personnel which would not, with equal probability, have developed in some other occupation. There is abundant evidence, however, that student nurses who come to the hospital tuberculin negative acquire the primary infection within three years (the training period) in greater numbers than is the case in other occupations.[14] The question then is Does this acquisition of the primary infection at about the age of 20 produce more tuberculosis in later life? Obviously, if one had never received any infection one could never get the disease. Infection in infancy is a factor in the development of disease in women in their twenties and in men in their thirties and forties. What is the ultimate clinical result when young women acquire their first infection of tuberculosis in hospitals? I have shown, and it is generally agreed, that graduate nurses do not have a high tuberculosis morbidity in later life.

There are no reliable morbidity estimates for physicians. If exposure in hospitals increases the morbidity of clinical tuberculosis later in life, there should be an increased mortality from tuberculosis among nurses and physicians. There are no reliable mortality estimates for nurses, but Whitney[15] has made available data on death rates among physicians. Chart 2 shows death rates from tuberculosis among physicians compared with other occupational groups. The mortality of physicians from tuberculosis is among the lowest. In spite of the theoretical possibilities, one must accept the fact that the group most exposed to tuberculosis in adult life, namely the physicians, does not have any more fatal tuberculosis than others of the same social-economic class. Whatever may be the reason for the high mortality among some of the social-economic groups, occupational contact in adult life with tuberculous patients is certainly not a factor.

SUMMARY

1. The incidence of tuberculosis among hospital personnel is about the same as that in any similar group.

2. Student nurses are the exception because they make up the one hospital group that includes a large number of tuberculin negative individuals. Some of these, on acquiring the primary infection, will show lung shadows and thus raise the incidence. Because most of these lesions never present any symptoms, this is true only if roentgenographic case finding methods are used.

3. A student nurse who is tuberculin negative is more likely to acquire the primary infection than adults in other occupations.

CONCLUSION

Occupational exposure to tuberculosis does not increase tuberculosis morbidity or mortality of hospital personnel except among tuberculin negative student nurses.

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ABSTRACT OF DISCUSSION

DR. C. D. SELBY, Detroit: I draw two primary conclusions from Dr. Brahdy's work: (1) that roentgenologic studies are desirable, if not essential, in case finding and (2) that exposure in relation to occupation has little influence on the incidence of tuberculosis. These conclusions suggest three collateral points for brief discussion, somewhat divergent from Dr. Brahdy's theme but of practical importance. The first is case finding methods. It has been demonstrated in making x-ray studies of applicants for employment as well as of employed groups that there are about four cases of active tuberculosis per thousand, and something like twelve to eighteen arrested cases or cases that might be classified as "all others." The patients with active involvement, of course, are unemployable. What they need is treatment, not employment. The others may be employed under medical supervision in suitable occupations. There is no question that the x-ray study, whether by the fluoroscope or by the flat plate method, is essential in early case finding. The second point is the relation of occupation, if any, to tuberculosis. The trends of compensation are toward recognition of occupational environmental conditions as being capable of aggravating preexisting tuberculosis, and awards are

15. Whitney, Jessamine S.: Death Rates by Occupation, Based on the Data of the United States Census Bureau, 1930, New York, National Tuberculosis Association, 1934.

being made in various states on that basis. This stimulates the employer to project case finding campaigns among his employees, which is desirable. This section is made up chiefly of health officers with a sprinkling of industrial physicians. In following out Dr. Brahdy's suggestion, using roentgenographic methods for case finding in industry and obtaining support for this in the trend of compensation authorities to recognize the aggravation of tuberculosis as compensable, there is one thing to do, and that is for the public health authorities to unite with industrial medicine in active case finding campaigns.

DR. HAROLD S. DIEHL, Minneapolis: Dr. Brahdy's paper is to me both reassuring and disturbing. It is reassuring to know that as dean of a medical school I need not feel responsible for any undue mortality from tuberculosis among the young men and women who become infected with tuberculosis while they are students in our schools of medicine and of nursing. At the same time I am seriously concerned for fear that this presentation may give rise to a false security and to a disregard of the hazard of the patient with open, active tuberculosis. Dr. Brahdy's data indicate that the mortality rate from tuberculosis among physicians and nurses is not excessive in comparison with the rest of the population. This, however, takes no account of the years of complete or partial disability, the modified lives, the changed careers which many physicians and nurses undergo because of this disease. Physicians and nurses who contract tuberculosis usually receive the best of medical care, and the result is a low mortality; but what about the morbidity? Dr. Brahdy has spoken about this also but on this point his conclusions are at variance with those of practically every one who has seriously studied this question. Heimbeck reports that, of 280 students in nursing who became positive to the tuberculin test while under his observation, two died from tuberculous meningitis, thirteen contracted pulmonary tuberculosis and eighty-one showed evidence of less serious forms of tuberculosis. This is a terrific morbidity rate, which certainly does not hold for the general population. In the May issue of the *American Review of Tuberculosis*, Boynton reports that, computed on a three months interval, the infection rate with tuberculosis, as indicated by a change from a negative to a positive tuberculin test, is about a hundred times as great among student nurses in a general hospital service as among students in a college of education on the same campus and that the infection rate among student nurses in a special tuberculosis service is five times that of nurses in the general hospital service. Few of these nurses develop clinical tuberculosis, but some of them do, and all of them have taken living virulent tubercle bacilli into their bodies. Can there be any doubt that this constitutes a hazard? Tuberculosis is a communicable disease. Any source of dissemination of a communicable disease is a danger to those exposed, unless they have been immunized. There is as yet no generally accepted means of immunization against tuberculosis; hence one must continue to consider the patient with open tuberculosis a hazard to others.

DR. CAMILLE KERESZTURI, New York: It is true for practically all infectious diseases that, if the infection rate is high in the population, the morbidity rate is high too. If the morbidity rate is high, unless the infection is very benign, mild and nonvirulent, the mortality rate must be high also. I do not see why the tuberculosis problem of hospital employees should be an exception to this general rule. Being a pediatrician, I see a great amount of primary tuberculosis and I do not consider it an entirely benign disease. Primary tuberculosis, at least in children, produces more hematogenous spread than any other type. Acute miliary tuberculosis and tuberculous meningitis originate more often from primary tuberculosis than from secondary and tertiary types. Therefore to me it seems unexpected that Brahdy finds a higher infection rate without higher morbidity or mortality rates among hospital employees than among other professions. I cannot resist stressing a point about case finding. Somehow it is not sufficiently emphasized that in the United States the general population manifests a positive tuberculin test in only about 30 per cent of the cases. Therefore I think it is uneconomical to roentgenograph every person in a survey without eliminating the two thirds of the group who are tuberculin negative and for practical purposes do not need any chest roentgenogram. On the other hand, tuberculin tests should be repeated once or twice a year on the negative reactors for the simple reason that freshly infected persons need medical assistance as soon as possible after they are infected.

DR. OSCAR O. MILLER, Louisville, Ky.: Dr. Brahdy has made a remarkable contribution to the epidemiology of tuberculosis. Any one who has had any experience along similar lines would draw similar conclusions. In Louisville we have been testing the nurses in City Hospital for the past seven years, and the only persons who have contracted clinical tuberculosis have been in the groups who were tuberculin negative on entrance. All the nurses have had an x-ray film of the chest. Not infrequently one will find a person with a negative tuberculin test and an x-ray examination showing Ghon's primary tubercle. One must infer that a primary tubercle may confer relative immunity without allergy. I did not conclude from Dr. Brahdy's paper that one should not exercise ordinary care among nurses and medical students to prevent massive infection. It is admitted that the men who come in with a negative tuberculin test do run a hazard of a massive infection. Some one might conclude that, since nurses with positive tuberculin tests did not break down with active tuberculosis, they might show a delayed reactivation of the lesion. We used a follow-up method and were in communication with the nurses after they had graduated. All of those replying had remained well and showed no evidence of loss of well-being. Recently there has appeared in the literature a statement that tuberculous infection is a dangerous thing, and yet the figures submitted for the group discussed showed 15 per cent of the children developing clinical tuberculosis and 85 per cent of them remaining essentially well; the authors failed to stress the point that those children were living in contact with open tuberculosis and inevitably received a massive infection.

DR. LEOPOLD BRAHDY, New York: Dr. Selby states that he doesn't believe any one objects to x-ray case finding. I'm sure that no one does. It is invaluable in the antituberculosis campaign. Dr. Diehl's comments are important, for he has had extensive experience in this field. He mentioned the high rate of primary infection. There is no doubt that the rate of change from tuberculin negative to tuberculin positive is higher among nurses and interns than in any other group. He asks "Does any one deny that taking the virulent tubercle bacilli into the body is a hazard?" That is not to be decided by speculation but by study of what happens in later life to those who passed through the primary infection in early adult life without any clinical illness. If there is no greater incidence of tuberculosis among them, if the mortality is not greater, one can say that it is not a hazard. As to whether nurses and physicians receive better treatment, that may be; but physicians are not renowned for the eagerness with which they seek annual x-ray examinations for themselves; they are thus deprived of the most important factor in good treatment, namely early treatment. Dr. Diehl emphasized the seriousness of the modified life and the tragic necessity for changed careers of nurses and others who have clinical tuberculosis. Unless it is recognized that some of these young people with roentgenograms showing tuberculosis have no important lesion and should not change their lives and their careers, physicians are neglecting their functions. To Dr. Kereszturi the response is similar. She said that if the primary infection rate is high the mortality rate must be high. But the mortality rate is not high. The conclusion should be based not on assumptions but on the actual mortality and morbidity rates. Dr. Kereszturi speaks of the course of primary infections in children. I do not know enough about children to concur or to dissent. It is interesting and important, but the question in this paper is Does the primary infection in adults produce disease? No one assumes that an adult who has never had scarlet fever undergoes a serious hazard on exposure to scarlet fever, even though he takes virulent germs into the body, merely by analogy to the fact that a child similarly exposed will probably contract the disease. The conclusion must be based on data of adults contracting the clinical disease, not allergy, after exposure in adult life.

THE CONTROL OF HYPOPROTEINEMIA IN SURGICAL PATIENTS

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PHILADELPHIA

The surgeon has become increasingly concerned with the nutrition of the surgical patient since it has been shown that a variety of lesions complicating operations are the result of nutritional disturbances. Jones, Eaton and White [1] and Mecray, Barden, Ravdin and their associates [2] have called attention to the hazards resulting from hypoproteinemia in patients subjected to operation. As the serum protein level is reduced in a dog with an intact stomach by diet and plasmapheresis the gastric emptying time of a water-barium meal is prolonged (fig. 1). Hypoproteinemia in man may so accentuate the edema around the stoma of a newly formed gastro-enteric anastomosis as to mimic in every way a technical defect of the anastomosis (figs. 2, 3, 4 and 5). In this condition there occurs also a marked delay in the passage of a bolus through the small intestine.[3] The studies of Thompson, Ravdin, Rhoads and Frank [4] have shown that hypoproteinemia may be an important factor in the failure of wounds to heal.

Observations which we have made on hypoproteinemic animals and human beings led us to investigate the methods by which hypoproteinemia could be corrected prior to operation and controlled afterward. In these studies we have investigated the effect of diet, the intravenous administration of amino acid mixtures, the jejunal and rectal administration of a peptone hydrolysate and the intravenous injection of serum, either in the normal state or after lyophilization and regeneration. Our experiences with these methods and preparations have led us to certain conclusions which justify a report.

METHODS

Diet.—A high carbohydrate-high protein diet given by mouth is the most satisfactory means of supplying the nutritional requirements of the surgical patient. Whenever possible we have used this. However, it is frequently impossible to get the patient to take sufficient calories prior to operation, either because of anorexia or because of pain or obstruction, and the very nature of the surgical procedure often precludes the oral intake of food for a period afterward.

Not only is the oral route most effective for supplying carbohydrate, protein and fat for energy requirements, storage and tissue regeneration, but it is the best one available for the introduction of the necessary accessory foodstuffs, the vitamins. From the standpoint of their effect on gastrointestinal activity the vitamin B complex is probably the most important group. A subclinical or clinical deficiency of the vitamin B complex exists in many of the patients coming to the surgeon with gastrointestinal lesions. When it has not been possible to give a yeast concentrate by mouth, we have used crystalline thiamin chloride subcutaneously. Several components of the vitamin B complex can now be given parenterally, but preferably yeast concentrate should be used by mouth since the administration of the components available for parenteral use does not cause a complete return of normal gastrointestinal motility and pattern.

The diet which we have found most satisfactory contains approximately 70 to 80 per cent of carbohydrate, 20 to 30 per cent of protein and 5 to 10 per cent of fat. It is important to remember that while in many surgical patients the deficiency in the reserve protein stores of the body and that in the serum protein may not be equally severe, a serious deficiency in the reserve stores may and does often coexist with a serious shortage in the serum protein. The diet should, if possible, be given in amounts adequate to maintain energy requirements and at the same time provide for tissue regeneration. There can be no doubt that the oral route can be used more frequently than it now is.

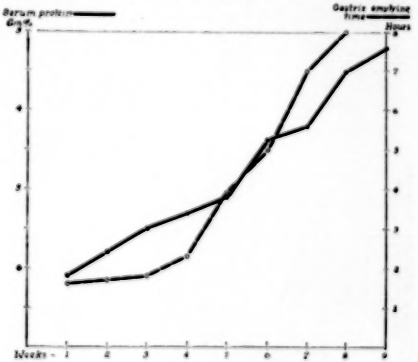

Fig. 1.—Relation of serum protein concentration to gastric emptying time.

CASE 1.—M. W., a white woman aged 60, whose condition was diagnosed as gastric ulcer and hyperthyroidism, demonstrated the fact that in certain patients hypoproteinemia can be corrected by a high carbohydrate-high protein diet alone.

Because of pain she restricted her diet, which at best was low in protein. As a result of this a severe protein deficiency developed, and she had lost nearly 30 pounds (14 Kg.) in weight. The level of serum proteins on Dec. 14, 1937, was 5 Gm. per hundred cubic centimeters, and the patient was at this time edematous. She was put on a high protein-high carbohydrate diet and by Jan. 3, 1938, the serum protein level had risen to 5.4 Gm. per hundred cubic centimeters; she had gained nearly 10 pounds (4.5 Kg.) and the edema was subsiding. Several weeks later, the serum proteins had risen to 6.4 Gm. per hundred cubic centimeters and all traces of edema had disappeared. Within five weeks the patient had regained her normal weight and had no ulcer symptoms. She was then subjected to subtotal thyroidectomy.

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From the Harrison Department of Surgical Research and the Surgical Clinic of the Hospital of the University of Pennsylvania.
Read before the Section on Surgery, General and Abdominal, at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 19, 1939.

1. Jones, C. M., and Eaton, F. B.: Postoperative Nutritional Edema, Arch. Surg. **27**:139 (July) 1933. Jones, C. M.; Eaton, F. B., and White, J. C.: Experimental Postoperative Edema, Arch. Int. Med. **53**: 649 (May) 1934.

2. Ravdin, I. S.: Factors Involved in the Retardation of Gastric Emptying After Gastric Operations, Pennsylvania M. J. **41**:695 (May) 1938. Barden, R. P.; Ravdin, I. S., and Frazier, W. D.: Hypoproteinemia as a Factor in the Retardation of Gastric Emptying After Operations of the Billroth I or II Types, Am. J. Roentgenol. **38**:196 (July) 1937. Jones, Eaton and White,[1] Mecray, Barden and Ravdin.[2] Barden and others.[3]

3. Barden, R. P.; Thompson, W. D.; Ravdin, I. S., and Frank, I. L.: The Influence of the Serum Protein on the Motility of the Small Intestine, Surg., Gynec. & Obst. **66**:819 (May) 1938.

4. Thompson, W. D.; Ravdin, I. S., and Frank, I. L.: Effect of Hypoproteinemia on Wound Disruption, Arch. Surg. **36**:300 (March) 1938. Thompson, W. D.; Ravdin, I. S.; Rhoads, J. E., and Frank, I. L.: Use of Lyophile Plasma in Correction of Hypoproteinemia and Prevention of Wound Disruption, ibid. **36**:309 (March) 1938.

Intravenous Amino Acids.—The amino acid solution which we have used was prepared by the acid hydrolysis of casein and was obtained from Frederick Stearns & Co. The first solutions used in the human being were not fortified with tryptophan or cystine. We have obtained no evidence that depleted serum protein stores were replenished by the use of this material even when given by a continuous intravenous drip over a period of nearly two weeks. More recently an amino acid mixture fortified with tryptophan and cystine has been used. With such a solution a small increase in the serum protein level has been obtained during a five day period in which a basal ration was taken by mouth.

We have studied the effect of continuous intravenous administration of a similar amino acid mixture, also fortified with tryptophan and cystine, in the restoration of a reduced serum protein level in dogs whose labile protein stores had been reduced nearly to the zero point by diet and plasmapheresis. In the occasional animal a positive nitrogen balance has been obtained, and we have some evidence that the serum protein concentration has been at times slightly increased when the mixture was administered continuously for from five to seven days and when sufficient dextrose was added to satisfy the major caloric requirements of the animal.

While this method of therapy may hold promise for the future, it is our feeling that at this time complete dependence on the amino acid mixtures available for clinical use is hardly warranted, especially when both the protein stores and the serum protein have been markedly depleted.

Fig. 2.—Gastric retention in a hypoproteinemic patient nineteen days after a pylorectomy and twenty-four hours after a water-barium sulfate meal.

Lyophile or Normal Serum.—The lyophile serum was prepared by the method of Flosdorf and Mudd.[5] Blood drawn into sterile containers from typed donors with a negative Kahn reaction was centrifuged so as to separate the serum from the cells. The sterile serum was lyophilized for us through the kindness of Dr. John Reichel, of Sharp & Dohme. After lyophilization the residues were stored in the refrigerator until required, at which time they were regenerated to hypertonic or normal concentrations by the addition of sterile water. The regenerated serum has been administered intravenously by the drip method.

Fig. 3.—The patient shown in figure 2 ten days later, one-half hour after a water-barium sulfate meal. Serum protein concentration is normal.

That this method is efficacious for temporarily elevating the serum protein can be seen in figure 6. It is important to give the regenerated serum slowly. Even when it was given in this manner there have been some very annoying reactions characterized by chills and fever with their associated phenomena. Until the cause of these reactions is ascertained, lyophile serum will have a limited usefulness.

For a number of patients we have used repeated blood transfusions or, if the cell count was normal, normal serum alone. Both of these materials are at times very helpful and can be utilized more frequently than they now are.

Peptone Hydrolysate.—As our studies have progressed we have become increasingly convinced that at present the most efficacious method of meeting the protein requirements of the patient is some type of alimentary feeding. A completely satisfactory method would in addition provide carbohydrate, fat, salt and sufficient fluid to obviate the simultaneous administration of fluids and salt by parenteral routes. We believe that these requirements can be met for most patients by the orojejunal feeding method which Stengel and Ravdin[6] have recently described (fig. 7).

A few patients have been fed by this method prior to operation, when sufficient calories were not being ingested and no obstruction to the passage of the feed-

5. Flosdorf, E. W., and Mudd, Stuart: Procedure and Apparatus for Preservation in "Lyophile" Form of Serum and Other Biological Substances, J. Immunol. **29**: 389 (Nov.) 1935.

6. Stengel, Alfred, Jr., and Ravdin, I. S.: The Maintenance of Nutrition in Surgical Patients with a Description of the Orojejunal Method of Feeding, Surgery **6**: 511 (Oct.) 1939.

ing tube existed. Occasionally edema around the pylorus so accentuated a cicatricial stenosis or a malignant obstruction as to result in nearly complete pyloric obstruction. In such instances siphon drainage of the stomach for a few days, as suggested by Graham,[7] and one or two transfusions of blood or serum often result in subsidence of the edema; the feeding tube then passes into the small bowel. We have used the special Abbott tube (fig. 8) or the Levine tube for this purpose.

When the orojejunal method was to be used after operation the tube was passed into the stomach before operation and through the stoma into the jejunum at the completion of the gastro-enteric anastomosis.

The peptone hydrolysate used for orojejunal feeding is a peptic-tryptic digest of beef peptone. It was first prepared for us by Dr. David L. Drabkin, of the Department of Physiological Chemistry of the School of Medicine of the University of Pennsylvania, but has more recently been supplied by Merck & Co. It gives a strong biuret reaction. The ratio of total nitrogen to amino nitrogen of the material was about 2 to 1. The hydrolysate is put into solution by placing a weighed amount in boiling water, constantly stirring the material as it goes into solution. Concentrations of protein in the solution calculated on the basis of total nitrogen varied from 4 to 10 per cent. To this solution we have added varying amounts of dextrose, sodium chloride and at times olive oil. Feeding in the human being has been maintained by a modification of the apparatus devised by Stengel and Vars.[8]

Fig. 4.—Gastric retention in a hypoproteinemic patient eighteen days after a pyloroctomy and twenty hours after a water-barium sulfate meal.

As a rule from 65 to 90 Gm. of protein and from 200 to 300 Gm. of dextrose were fed daily. In addition sufficient sodium chloride and water were added to maintain a normal level of the plasma chlorides and a normal fluid volume.

We have used the orojejunal method in more than twenty cases, some of which have been reported elsewhere.[6] The following brief case report shows the results which may be obtained by this method.

Fig. 5.—The patient shown in figure 4 three days later, forty minutes after the administration of a water-barium sulfate meal. Serum protein concentration is normal.

CASE 2.—S. C., a white man aged 54, had a posterior gastrojejunostomy Sept. 24, 1938, because of a benign duodenal ulcer with complete stenosis. The serum protein level just prior to operation was 6 Gm. per hundred cubic centimeters. On the day following operation it was 5 Gm. Peptone hydrolysate feeding by the orojejunal method was begun September 25. These feedings supplied the patient with an average of 65 Gm. of protein each twenty-four hours over a five day period. The protein was supplemented with from 90 to 220 Gm. of dextrose daily and with sufficient sodium chloride to maintain a normal plasma chloride level.

November 1 the serum proteins had risen to 7.5 Gm. per hundred cubic centimeters. Orojejunal feeding was then discontinued and the patient given food by mouth (fig. 9).

When the jejunal method was not possible we at times resorted to the rectal method of administration of the hydrolysate. That such protein-split products are absorbed in considerable amounts has been demonstrated by Rhoads, Stengel, Riegel, Cajori and Frazier[9] in the dog and by us in man (fig. 10).

COMMENT

A considerable number of the patients coming to the surgeon for operation for gastrointestinal lesions have for some time prior to admission to the hospital received insufficient amounts of a diet suitable to maintain energy requirements. This is at times due to inability to eat enough food, at others to inability to

7. Graham, Roscoe R.: Technical Surgical Procedures for Gastric and Duodenal Ulcer, Surg., Gynec. & Obst. **66**:269 (Feb., No. 2A) 1938.

8. Stengel, Alfred, Jr., and Vars, H. M.: An Apparatus for Continuous Intravenous Injections in Unanesthetized Animals, J. Lab. & Clin. Med. **24**:525 (Feb.) 1939.

9. Rhoads, J. E.; Stengel, Alfred, Jr.; Riegel, Cecilia; Cajori, F. A., and Frazier, W. D.: The Absorption of Protein Split Products from Chronic Isolated Colon Loops, Am. J. Physiol. **125**:707, 1939.

retain the food eaten, and at others to the lack of a suitable combination of the essential foodstuffs. In addition to adequate amounts of carbohydrate, protein and fat the body stores of certain of the essential accessory foodstuffs, the vitamins, are often limited so that a clinical or subclinical deficiency of one or more may be present.

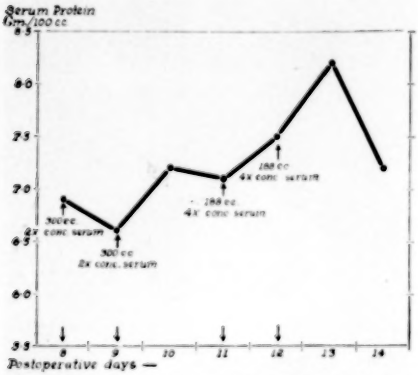

Fig. 6.—Intravenous injections of lyophile serum in a patient who had gastric resection for carcinoma.

Information recently made available strongly supports the idea that some degree of visceral protection can be afforded [10] the patient during anesthesia, that wound healing will be better and that the convalescence and functional activity in gastrointestinal conditions will be smoother if attempts are made to supply an adequate dietary regimen for some days prior to operation and during the period of enforced gastric rest

Fig. 7.—Patient being fed by the orojejunal method after a subtotal gastrectomy.

after operation. By one method or another we have attempted to do this.

When any existing dehydration is overcome the patients with nutritional deficits frequently have a serum protein concentration at or below the edema level. Subcutaneous edema is but an external manifestation of a widespread inability to keep fluids in the blood vessels. The edema which normally occurs as a result of trauma at the site of operation is greatly accentuated by the impairment of the physiologic mechanism for drawing excess amounts of fluid back into the vascular system. Such edema interferes with the normal emptying of the proximal portion of the gastrointestinal tract. The process which we have studied in the stomach probably exists also in the small and large bowel.

The emphasis which surgeons have placed on correcting dehydration and electrolyte losses before and after operation has often been accompanied by failure to consider the mechanism involved in keeping fluids in blood vessels. In the presence of hypoproteinemia fluids tend to leave the vessels, and the intravenous administration of large amounts of sodium chloride accentuates the process. We have more than once observed subcutaneous edema in patients receiving large amounts of sodium chloride whose serum protein concentration before the administration of fluid was above the accepted critical level of edema, a fact pointed out some time ago by Weech and Ling.[11] Proper

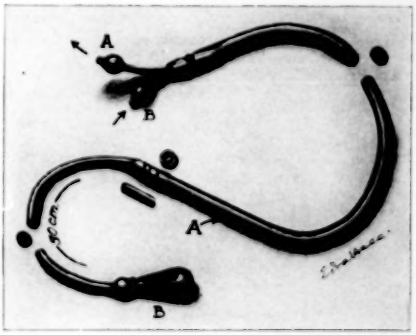

Fig. 8.—Special Abbott tube for orojejunal feeding and simultaneous suction drainage of the stomach.

control of fluid and electrolyte balance in surgical patients receiving parenteral fluids is not possible unless the serum protein concentration is maintained within early normal limits.

In the presence of edema at the new stoma the roentgenologist is unable to state whether the disturbance in emptying is the result of a technical error in the anastomosis or is due to a disturbance in the mechanism for keeping fluid in vessels. The roentgenologist is able merely to record whether the stoma functions or not.

The studies of Mecray, Barden and Ravdin [12] demonstrated that, when hypoproteinemia with resultant edema was the sole factor in the retardation of gastric emptying, hyperperistalsis was observed in the gastric fluoroscopic study. Subsequent observations made in our laboratories demonstrate that when hypoproteinemia and a vitamin B complex deficiency coexist the stomach is larger and more atonic and gastric peristalsis is less active or even absent.

10. Goldschmidt, Samuel; Vars, H. M., and Ravdin, I. S.: The Influence of the Foodstuffs upon the Susceptibility of the Liver to Injury by Chloroform, and the Probable Mechanism of Their Action, J. Clin. Investigation **18**: 277 (May) 1939.

11. Weech, A. A., and Ling, S. M.: Nutritional Edema: Observations on Relation of Serum Proteins to Occurrence of Edema and to Effect of Certain Inorganic Salts, J. Clin. Investigation **10**: 869 (Oct.) 1931.

12. Mecray, P. M., Jr.; Barden, R. P., and Ravdin, I. S.: Nutritional Edema: Its Effect on the Gastric Emptying Time Before and After Gastric Operations, Surgery **1**: 53 (Jan.) 1937.

Recently Heublein, Thompson and Scully [13] have studied the gastrointestinal activity during vitamin B complex deficiency in dogs and have demonstrated a marked retardation of gastric emptying in animals which were not hypoproteinemic. The parenteral administration of thiamin chloride (vitamin B_1 hydrochloride) to such animals did not cause a complete return of normal gastrointestinal activity. Even the parenteral administration of thiamin chloride, riboflavin (B_2) and nicotinic acid did not result in a complete return to normal. A normal motility and pattern were restored only after the addition to the diet of large amounts of the vitamin B complex.

When the orojejunal method of feeding is not possible, the administration of a peptone hydrolysate by rectum offers a possible but less satisfactory method of maintaining the nutritional requirements of the patient. If, during the period of colonic feeding, dextrose is administered parenterally, the caloric intake is increased and in addition the patient's protein stores are at least in part protected. It is well known that the administration of dextrose to starving patients prevents to some extent the protein breakdown that occurs when no dextrose is administered. The patient whose duodenal fistula prevented the use of the oral or jejunal method illustrates the fact that the rectal method has greater possibilities than we have previously ascribed to it, and the data of Rhoads and his associates [9] obtained from isolated loops of the colon of the dog substantiate our clinical observations.

The use of repeated blood transfusions or normal serum is an efficacious means of temporarily elevating

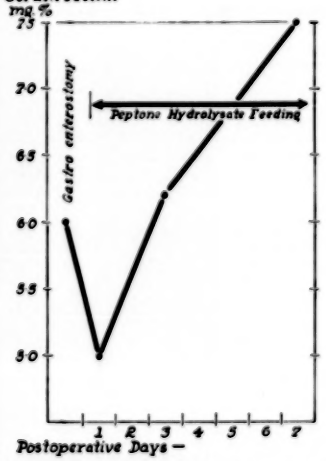

Fig. 9.—Effect of orojejunal feeding on the serum protein.

a reduced serum protein concentration. Hypertonic lyophile serum is even more efficacious, but its use is attended by a higher incidence of untoward reactions.

It may be possible to meet the requirements of the patient satisfactorily by the continuous intravenous administration of amino acid mixtures. The investigations of Elman and Weiner [14] offer hope that before long this method will be useful. At present, however, the data are not sufficiently convincing for us to conclude that this method should be used to the exclusion of more efficient procedures.

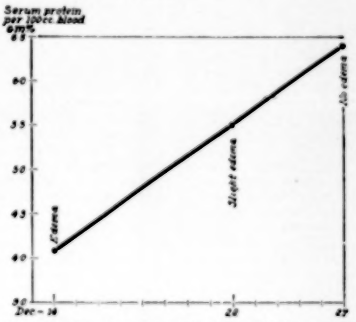

Fig. 10.—Changes in the serum protein concentration in a patient with a duodenal fistula during the rectal administration of a protein hydrolysate. No food was administered by mouth during the rectal feeding.

Whatever the method used the surgeon should, if possible, provide for the maintenance of the basal caloric requirements of the patient and for sufficient protein to permit restoration of depleted protein stores and a more normal serum protein concentration. The prevention of edema, the normal healing of wounds and the regeneration of injured tissues require the maintenance of normal, or the replenishment of depleted, serum protein and reserve stores of protein in the body. The patient whose reserve or labile stores of protein are depleted and whose serum protein concentration is at or below edema levels presents an increased hazard regardless of the technical skill of the operator.

ABSTRACT OF DISCUSSION

DR. CHESTER M. JONES, Boston: It is becoming increasingly obvious that the so-called poor risk patient is frequently subject to a high surgical mortality because of malnutrition, owing first to the disease itself and second to the necessary postoperative period of starvation. I am glad to have the authors' substantiation of clinical and experimental observations that I made six years ago. At that time I was struck by the occurrence of postoperative edema, which might complicate convalescence or even provide the underlying cause of death following surgical procedures, particularly those involving the gastrointestinal tract. Protein lack in these patients can be laid to several factors: insufficient intake, hemorrhage preceding operation, the increased metabolic demands associated with fever and sepsis, and protein loss by drainage and by the administration of too much fluid or sodium chloride preoperatively or postoperatively. Any or all of these factors may contribute to serious protein lack, with a resulting tendency to nutritional edema. Another important factor favoring edema at the operative site may be vitamin B complex deficiency, with resulting diminution in gastrointestinal motility. The authors mentioned poor healing of wounds in relation to hypoproteinemia. I should like to add lack of vitamin C as part of a general deficiency so frequently found in these patients, affecting particularly the healing of wounds. I have just completed some work showing definitely that in the first few postoperative days there is an increased demand for

13. Heublein, G. W.; Thompson, W. D., and Scully, J. P.: The Effect of a B Complex Deficiency on Gastric Emptying and Small Intestinal Motility, to be published.

14. Elman, Robert, and Weiner, D. O.: Intravenous Alimentation, J. A. M. A. **112**: 796 (March 4) 1939.

vitamin C, resulting probably from the increased need for the laying down of collagen in healing tissue. Protein lack in these depleted patients therefore may properly be considered to be due to the loss of electrolytes, fluid administration, vitamin B and vitamin C deficiency and quite possibly vitamin K lack as well.

DR. ROBERT ELMAN, St. Louis: The pioneer clinical and experimental work of Dr. Ravdin and his associates has pointed out the importance of hypoproteinemia to the surgeon. Not so long ago hypochloremia was also shown to increase the mortality following surgical procedures. Both of these studies have shown how important biochemical thought is in the care of patients to be operated on. Surgeons are becoming aware more and more that many patients, even those that seem to be normal, are nutritionally depleted and that this depletion affects or may affect any of the nutritional elements. In the case of hypochloremia, the replacement of the deficiency is relatively easy. In the case of hypoproteinemia this replacement is rather difficult, as amply indicated by the observations reported by the authors. The reason is that hypoproteinemia is but one manifestation of severe nutritional depletion; not only is the serum protein depleted but tissue proteins elsewhere are also depleted and hormones are not being manufactured. Moreover, essential vitamins, not only the ones that are known but also those of the B complex, which are not yet known, may also be depleted. Many of these may be important in restoring the protein loss by synthesis from amino acids. I have found that transfusions in these severe cases, while helpful, are not sufficient to remedy the nutritionally depleted patient. We are dealing in these patients with the problem of serum protein regeneration. What we like to do is to have patients who can make serum protein and make it rapidly. One would think that a high protein diet in such a patient should be effective, yet with one of the patients of Dr. Ravdin and his co-workers it required several weeks on a high protein diet to raise the serum protein from a level of 5 to one of 6.4. Other patients were able to produce serum protein in a much shorter time. The differences are undoubtedly due to the complexity of the problem involved in the regeneration of serum protein. Serum protein is entirely different from most tissue proteins. Tissues absorb amino acids from the blood and manufacture protoplasm. Serum protein on the other hand may be looked on as a secretion; it must not only be manufactured but be secreted into the blood, and it is probable that many factors are necessary for this process.

DR. I. S. RAVDIN, Philadelphia: Dr. Elman has done pioneer work in the use of amino acid preparations in an attempt to raise the serum protein concentration of hypoproteinemic patients. I wish to stress that in attempting to maintain the fluid and electrolyte balance of our patients we have frequently forgotten that a normal serum protein concentration is necessary if injected fluids are to remain in the blood vessels. There is no such thing, in my opinion, as a definite critical level for edema. Edema depends on a number of factors which Dr. Jones discussed, and one of the most important from the standpoint of the surgical patient is the amount of salt that is administered. We have time and again seen edema in surgical patients to such an extent as to cause complete obstruction of a newly made gastric stoma, so that the roentgenologist reported that there was complete obstruction as the result of mechanical defect of the operation, when in reality what had happened was that the patient had edema which was conditioned by a low serum protein on the one hand and an increased amount of salt on the other. Unless one considers the salt and the fluid, and in addition to this the important component of the serum protein, one cannot properly maintain a fluid and electrolyte balance which will be most satisfactory for the surgical patient. Dr. Elman has pointed out that there is a close connection between the serum protein and the tissue protein. One cannot expect to get regeneration of the two in the same degree. There is evidence that when the tissue protein stores are greatly depleted these may be supplied first by any protein that is administered, and therefore the serum protein remains low over a period of time. Under such conditions normal or lyophile serum would be the most satisfactory agent for use if a more physiologic state of gastrointestinal activity during and immediately after gastrointestinal operations is desired.

SYMPATHICOBLASTOMA

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AND
JOHN R. NORCROSS, M.D.
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Although tumors of the sympathetic nervous system are rarely encountered in the practice of orthopedic surgery, the cases presented in this paper show that they must be considered before making the final diagnosis of certain lesions of the spine. Owing to the vast distribution of sympathetic nervous tissue, one may find these neoplasms growing almost anywhere within the body and producing a great variety of symptoms. The neuropathologist and neurosurgeon probably see these cases more frequently than others. Occasionally the pediatrician, the internist and the abdominal surgeon encounter them. The urologist must always consider the possibility of tumors of the adrenal gland in differentiating certain lesions of the kidney.

Originally, tumors of the adrenal gland as well as other retroperitoneal tumors that were found in children were considered to be sarcomas. It was in 1864 that Virchow first thought that these tumors might be of nervous tissue origin. He thus classified this group as gliomas. In 1891 Marchand observed the similarity in histologic picture between the developing sympathetic nervous system and some of the adrenal tumors. He conceived the idea that perhaps these tumors were derived from neuroblasts. In 1901 Pepper reported a series of adrenal tumors with metastases to the liver. In 1907 Hutchison reported tumors of the adrenal gland with metastases to the skull. He considered them to be sarcomas.

Wright [1] in 1910 showed conclusively that the cells of these tumors, which were often associated with delicate fibrils, had the same morphology as the cells from which the sympathetic nervous system and the medulla of the adrenal develop. Thus Wright was really the first to devise a logical classification based on developmental relationships. Since Wright's work, different classifications of this group of tumors have been proposed by various authors such as Bailey and Cushing [2] and Scott and Palmer.[3]

By far the greater majority of the cases of this neoplasm that have been reported in the literature involve the medullary portion of the adrenal gland. Relatively few tumors have been reported as occurring in other parts of the body. Symmers [4] has reported a tumor which apparently was a sympathicoblastoma arising from the scapular region. Stewart [5] found one arising from the cervical sympathetics, while Anderson and Shennan [6] have reported a tumor beginning in the thoracic cavity. Harbitz [7] described the neoplasm anterior to the sacrum and closely related to the sympathetic system. Lambert [8] gave an account of a tumor

Read before the Section on Orthopedic Surgery at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. Wright, J. H.: J. Exper. Med. **12**: 556, 1910.
2. Bailey, Percival, and Cushing, Harvey: A Classification of Tumors of the Glioma Group on a Histogenetic Basis, Philadelphia, J. B. Lippincott Company, 1926.
3. Scott, Ernest, and Palmer, D. M.: Am. J. Cancer **16**: 903-917 (July) 1932.
4. Symmers, Douglas: A Recurrent Neuroblastoma of the Scapular Region, J. A. M. A. **60**: 337 (Feb. 1) 1913.
5. Stewart, M. J.: J. Path. & Bact. **23**: 119, 1919.
6. Anderson, J. S., and Shennan, T.: J. Path. & Bact. **26**: 543 (Oct.) 1923.
7. Harbitz, Francis: Tumors of the Sympathetic Nervous System and the Medulla of the Adrenal Glands, Arch. Int. Med. **16**: 312 (Aug.) 1915.
8. Lambert, R. A.: Proc. New York Path. Soc. **17**: 96, 1917.

which had its primary location in the retroperitoneal region with extensive metastases to the lymph glands and the osseous system but no involvement of the adrenals. Schultz [9] reported a tumor which arose from the left abdominal sympathetic trunk. Ritter [10] has reported two tumors both arising from the jejunum, presumably from nerve cells of the intestinal sympathetic plexus. Both of these were in adults. Cushing and Wolbach [11] reported a tumor in a 2 year old child which apparently arose in the region of an intervertebral foramen and had extended within the spinal canal as well as into the spinal muscles. Jacobsen and Hosoi [12] reported that in a 9 month old infant the primary tumor took origin in the skin or subcutaneum of the thigh. Scott and Palmer [8] have reported an intrathoracic sympathicoblastoma. Stern and Newns [13] have reported a series of twenty-five tumors, of which one was thoracic and the rest were abdominal.

A sympathicoblastoma is a completely undifferentiated malignant tumor which takes its origin from embryonal cells of the sympathetic nervous system. The parent cell of the sympathetic primordia is the sympathogonia. This is a completely undifferentiated spherical cell with a densely staining nucleus and little cytoplasm. This develops into a larger cell, the sympatholast, which is polygonal and has a considerable amount of cytoplasm in which fibrils may be seen. The cytoplasm of these cells may be prolonged into filamentous processes. The sympatholast is multipotential and migrates into the visceral areas to form the anlage of the sympathetic nervous system. It eventually may differentiate into the neurons of the sympathetic ganglions and into the chromaffin cells of the adrenal medulla. Tumors that are composed of embryonal cells in varying degrees of maturity naturally would be difficult to classify accurately. The microscopic appearance of such tumors is dependent on the type of cell which predominates. If most of the cells are sympathogonia, the tissue may appear similar to that of a sarcoma, there being masses of densely packed round cells with little cytoplasm. Usually there are some sympatholasts in the picture. These cells are usually associated with delicate fibrils which at times are arranged in parallel bundles. One or more rows of these cells may be formed about a central mass of fine fibrils, forming the characteristic rosette.

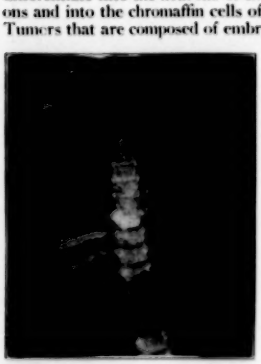

Fig. 1 (case 1).—Sclerosis of the body of the ninth dorsal vertebra and absence of the pedicle shadows of the seventh, eighth and ninth dorsal vertebrae. There is some erosion of the eighth and ninth ribs on the right.

Owing to the fact that there are relatively few of these tumors that have been reported in the literature and because of the interesting problem in diagnosis that may arise, we report the following cases:

REPORT OF CASES

CASE 1.—C. A. S., a girl aged 18 months, was first seen at the orthopedic dispensary of Children's Memorial Hospital, Chicago, July 26, 1936. Her birth had been normal and she apparently was perfectly well during her early infancy. She learned to walk at 9½ months of age. When she was 10 months old she was vaccinated for smallpox. The vaccination did not take and a second vaccination was performed ten days after the first. She had a severe reaction following this, with a high fever and swelling and inflammation of the arm. From three to four days after the second vaccination the parents noted that the child was unable to walk or to sit up alone. The neurologic and pediatric consultants who saw her at this time made a diagnosis of paraplegia due to postvaccinal encephalomyelitis.

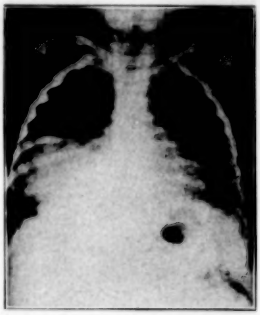

Fig. 2 (case 1).—Large tumor mass extending into the lower part of the right thoracic cavity.

The child was brought to the orthopedic department eight months after the onset of the paralysis. The physical examination revealed the following significant data: The chest was symmetrical. An area of dulness to flatness was present at the base of the right lung with diminished breath sounds and expiratory rales overlying this area. The left lung was normal. The liver was palpable 3 cm. below the costal margin. The kidneys and spleen were not palpable. The bladder was distended to a level just above the umbilicus. The spine was straight with a rounded prominence in the region of the ninth dorsal vertebra. The upper extremities were normal. The lower extremities presented flaccid paralysis of all muscle groups. Pain and temperature sensation were absent from a level slightly above the umbilicus downward. There was normal sensation above this level. The abdominal, patellar and achilles reflexes were absent. There was no ankle clonus and no Babinski reflex. X-ray examination of the spine revealed marked sclerosis of the body of the ninth dorsal vertebra (fig. 1) with hypertrophy and sclerosis of the spinous process of this vertebra. The pedicle shadows of the seventh, eighth and ninth dorsal vertebrae were absent on both sides. The eighth and ninth ribs were definitely narrowed at their proximal ends. X-ray examination of the chest showed a large mass extending well into the right side (fig. 2).

A spinal puncture was done on July 28. A small amount of yellowish fluid was obtained. Queckenstedt's sign was positive. The cell count was 270 per cubic millimeter. The culture was negative. Blood pressure in the right arm was 118 systolic and 80 diastolic; in the left arm it was 115/80. Results of laboratory tests were negative.

It was felt that this patient probably had a tumor arising within the spinal canal which had extended through the intervertebral foramen into the right thoracic cavity. This deduction was largely based on the x-ray evidence of absence of the pedicle shadows and the erosion of the ribs with the presence of a mass in the right side of the chest. It was decided that a biopsy was indicated and on August 4 a tumor mass was found protruding between the spinous processes of the eighth and ninth dorsal vertebrae and also between the eighth and ninth

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10. Ritter, S. A.: Am. J. Path. **1**: 519 (Sept.) 1925.
11. Cushing, Harvey, and Wolbach, S. B.: Am. J. Path. **3**: 203-216 (May) 1927.
12. Jacobsen, V. C., and Hosoi, Kiyoshi: Am. J. Path. **6**: 427 (July) 1930.
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ribs on the right. The tumor appeared to be too extensive to warrant further surgical procedure at this time. Tissue removed for microscopic examination had cells characteristic of a sympathicoblastoma (fig. 3).

The patient was given roentgen therapy and after twelve treatments, which totaled 2,030 roentgens, marked progress was noted both clinically and by x-ray examination of the

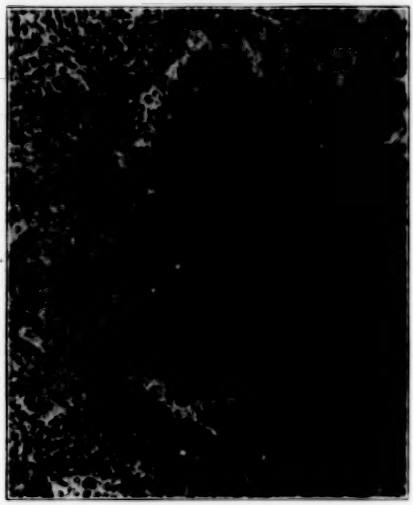

Fig. 3 (case 1).—Histologic preparation from biopsy material which contains both sympathogonia and sympatholasts.

chest. The size of the tumor had decreased appreciably. However, the paralysis still persisted. On October 1 a spinal puncture was again performed and evidence of a block was present. A laminectomy was then done from the sixth to the eleventh dorsal vertebra in an effort to relieve any pressure that might be present. At this operation no gross evidence of the tumor could be found. The dura was markedly thickened and fibrosed in the area from the seventh to the ninth dorsal vertebra. Above the level of the seventh dorsal vertebra it had a normal appearance and pulsations were present. There was no pulsation below this level. The dura was incised longitudinally and the flow of spinal fluid along the cord was reestablished. A piece of tissue was removed from the area where the dura was particularly thickened. Microscopic section of this tissue revealed the presence of few tumor cells such as were characteristic of the tissue removed at the previous operation. There was considerable evidence of calcification in these sections. In other words, it appeared that the original tumor was highly sensitive to roentgen therapy but that the neoplasm had not been completely eradicated. A second series of roentgen treatments was given shortly after the operative wound was healed. This time the patient received a total of 1,400 roentgens. Since the laminectomy she had had no appreciable return of muscle power or sensation in the lower extremities.

For six months following the completion of the second series of roentgen treatments there was no evidence of recurrence of the tumor. There was evidence of regeneration of the eighth and ninth ribs on the right. In July 1937 x-ray examination revealed a recurrence of the tumor mass in the right side of the chest. A third series of roentgen treatments, with a total of 1,100 roentgens, was given. The tumor did not respond to the roentgen therapy as well this time as it did on the other two occasions. The patient became progressively weaker as the mass continued to increase in size. On November 18 there was marked pulmonary edema and the child died of cardiac failure.

Postmortem examination revealed a large dumb-bell shaped tumor occupying both the right and the left thoracic cavity and extending from the sixth to the twelfth thoracic vertebra (fig. 4). The mass measured 4 by 7.5 cm. through its widest diameters. It completely encircled the inferior vena cava and the thoracic aorta, and portions extended along the intercostal spaces on the right from the sixth to the twelfth rib. The tumor was dull grayish and nodular, with a few hemorrhagic areas. On section the tumor was grayish white and friable.

The lungs showed marked metastases, the left lung being entirely composed of a bloody necrotic friable mass of tumor tissue. There was no other evidence of metastases, and the adrenal glands showed no abnormalities.

Microscopic examination of the tumor mass revealed two types of cells. One was a small round cell resembling a lymphocyte with a densely staining nucleus and only a small ring of cytoplasm and no processes; this was a sympathogonia. In some areas these cells were closely packed together in dense masses with little or no connective tissue separating them, looking much like small round cell sarcomas. The other type of cell was large and polygonal with a large amount of cytoplasm in which fine fibrils were seen. In many cells the cytoplasm was prolonged into short processes at one end. The nucleus was large and the chromatin finely divided, giving a vesicular appearance to the nucleus (sympatholast). In a few areas these cells resembled adult ganglion cells. For the most part the two types of cells were intimately mixed, being arranged in closely packed areas with definite alveolar arrangement, the groups being separated by dense strands of fibrous tissues. In other areas they were loosely packed with

Fig. 4 (case 1).—Postmortem specimen showing a large dumb-bell type of tumor extending on each side of the spinal column and encircling the aorta and vena cava.

no orderly arrangement but with strands of connective tissue between the irregular masses of cells. In some areas definite pseudorosettes were seen with fine fibrillar material in their centers. A few of these rosettes were definitely perivascular in location. The most marked feature of the sections was the marked variation in size, shape and staining qualities of the cells. This picture is that of a sympathicoblastoma.

This patient had a tumor which took origin in the spinal canal and migrated through the intervertebral foramen into the thoracic cavity on both sides, forming a characteristic dumb-bell type. In the early stages the tumor responded rapidly to roentgen therapy. However, this treatment soon failed to control the growth, which is typical with these neoplasms .

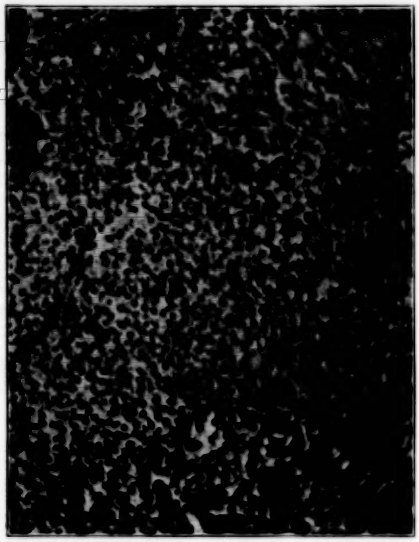

Fig. 5 (case 2).—Histologic preparation made from tumor found at operation. The sympathogonia and sympatholasts are present in this section.

Through the courtesy of Drs. George W. Hall and Eric Oldberg, a second case is presented. This case also offers an interesting problem in diagnosis. In some respects it is similar to the first case, while in other ways there is a definite contrast between the two.

CASE 2.—Robert R., aged 9 years, entered St. Luke's Hospital on Nov. 5, 1936, because of paralysis and loss of sensation in both lower extremities. The patient had always been in good health until one month before admission to the hospital, at which time he began to have pain in the upper left part of the chest radiating down the left arm, and shortness of breath. One week after his initial symptoms appeared, he noticed a weakness of the musculature of both lower extremities. He apparently had little if any sensory disturbance at this time, and the family physician made a diagnosis of infantile paralysis. However, about one week later he had lost control of the vesical and rectal sphincters and had developed complete motor and sensory paralysis from the waist down. A diagnosis of spinal cord tumor was then made. Examination revealed the following abnormal features: Chest expansion was restricted on the left. Dulness was present over the anterior and posterior aspects of the chest on the left. Breath sounds were absent above the nipple line on the left. Hyperresonance was present over the entire right side of the chest. Heart tones were normal and borders within normal limits except that the heart was shifted to the right. The blood pressure was 110 systolic and 70 diastolic. The lower extremities were completely paralyzed, with a mild degree of spasticity. There was increase in the deep reflexes, and the superficial reflexes were absent. The Babinski sign was negative. X-ray examination on admission revealed complete obliteration of the left thoracic cavity, the heart and mediastinal structures being displaced to the right. There was definite erosion of the third rib on the left, adjacent to the costovertebral junction. The pedicle shadows were all normal.

Laminectomy of the second, third and fourth dorsal vertebrae was performed on November 6. An extradural tumor was found within the canal. On removal of this mass, normal pulsations in the cord were reestablished below the level of the site of the tumor.

Histologic preparations made from the tumor showed large masses of cells arranged in groups around blood vessels (fig. 5). The cells were small and round with vesicular nuclei and little granular cytoplasm. In other sections these cells were so arranged as to resemble epithelium. The general type of cells present combined with their arrangement was sufficient to establish a diagnosis of sympathicoblastoma. Roentgen therapy was instituted.

On May 17, 1937, x-ray examination revealed marked regeneration of the third rib on the left, and the lung on that side appeared normal. The patient had regained control of his sphincters and there was some evidence of a return of sensation and muscle power in the lower extremities. The deep reflexes were still hyperactive and the Babinski sign was positive.

X-ray examination October 5 showed a broadening of the left third rib, with areas of both sclerosis and rarefaction. In the upper lobe of the left lung there was an area of increased density about the size of a half-dollar, apparently a recurrence of the tumor mass. The patient began having a daily elevation of temperature and complained of shooting pains in the upper extremities, particularly the left. The lower extremities remained spastic. The patient became progressively worse in spite of roentgen therapy. He died in March 1938. Unfortunately permission for autopsy was not obtained.

In this case the x-ray examination of the spine revealed normal pedicles as well as normal interpedicular spaces. Because of these observations it is thought that the tumor had a paravertebral origin in the region of the third rib on the left and migrated through the intervertebral foramen into the spinal canal. This is in marked contrast to the first case. The patient received seven courses of roentgen therapy totaling 10,100 roentgens, which gave only temporary relief, as in the preceding case.

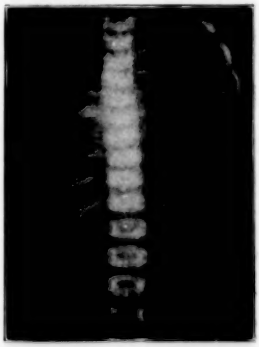

Fig. 6 (case 3).—Calcifications appear in the mass in the lower right part of the chest. The spine appears to be normal.

CASE 3.—Ralph R., aged 6, entered the Children's Memorial Hospital on Aug. 6, 1937, because of pain in the left leg for one month, rather inconstant abdominal pain for three months and loss of 10 pounds (4.5 Kg.) in weight in three months. His birth was normal. His past history was irrelevant except for his having had whooping cough at 3 years of age. Examination yielded the following positive results: The neck showed definite limitation of motion on anteroposterior bending; it was freely movable on lateral bending. Kernig's sign was positive. There was slight tenderness in the suboccipital region. Chest expansion lagged on the right. Dulness was present over the right lung from the fourth rib to the base, both anteriorly

and posteriorly. There was slight diminution of breath sounds over this area. The abdomen was normal except for slight tenderness in the upper right quadrant. The extremities were normal except for limitation of internal rotation of both hips. The spine was straight; there was rounded fulness of the lumbar spine in the region of the second lumbar vertebra. There was distinct resistance to hyperextension. On x-ray examination the spine appeared to be normal. A dense shadow at the base of the right lung near the spine was suggestive of a lesion of intrathoracic origin, probably inflammatory in nature, located in the lower half of the mediastinum. The Mantoux test with a dilution of 1:10,000 was strongly positive. The patient had a daily low grade elevation of temperature. On November 27 he was sent home to be followed in the outpatient department. At that time a tentative diagnosis of tuberculoma of the mediastinum was made.

On Jan. 6, 1938, the patient was readmitted to the hospital because of definitely palpable cervical glands, headache and pain in the lower extremities. Examination showed essentially

Fig. 7 (case 3).—Histologic preparation made from biopsy material reveals the characteristic arrangement of the two types of cells. Several rosettes may be seen in this section.

normal conditions except for three discrete cervical glands on the left and several palpable inguinal glands. The lungs were resonant throughout. There were diminished breath sounds over the right side of the chest. The lumbar spine was rounded but was not suggestive of Pott's disease. Roentgenograms revealed no pathologic change of the spine but did show a large shadow in the posterior part of the mediastinum in which there were some irregular calcifications (fig. 6).

It was difficult to explain this mass on a tuberculous basis without pathologic evidence in the bones. It was suggested that it might be a mediastinal tumor, possibly of sympathetic tissue origin. A biopsy of the cervical glands was done on January 29. Histologic preparations made from these glands showed the presence of cells which appeared to be both sympathogonia and sympathoblasts, more or less intimately mixed (fig. 7). Masses of the sympathogonia, or round cells, were closely packed together. In other localities smaller groups of these cells were separated by strands of fibrous tissue. The general characteristics of the sections were definitely those of a sympathicoblastoma. Death occurred April 28. Autopsy was not permitted.

A fourth case which was observed is reported briefly:

Case 4.—A. B., a 4½ year old girl, was admitted to the hospital on June 15, 1937, because of pain in the left lower extremity for six weeks, abdominal pain located about the umbilicus for three months and a daily elevation of the temperature of about 1 to 1.5 degrees for about three months. The past history was unimportant except for bronchitis three months and tonsillectomy about six weeks before entry. Examination showed systolic pressure of 130 and diastolic of 87. Otherwise observations were negative except for obliteration of lumbar lordosis and a definite psoas spasm on the left. The abdomen showed a definite palpable mass just to the left of the spine at the level of the second, third and fourth lumbar vertebrae. This mass was firm in consistency and smooth in outline and did not fluctuate. The upper and lower extremities were normal. There was no evidence of any nerve involvement. X-ray examination revealed no pathologic condition of the spine. The iliopsoas margin was clearly defined on the right but was not visualized on the left. The intravenous pyelogram showed a definite mass about 5 by 2 cm. overlying the left iliopsoas muscle, displacing the left kidney laterally. The Mantoux test with a dilution of 1:10,000 was negative, that with purified protein derivative No. 2 was positive. The urine was normal. No tubercle bacilli were found on guinea pig injection of urine. Blood counts were normal.

In view of these data it was thought that the patient had a retroperitoneal tumor rather than Pott's disease. An exploratory operation was recommended, but the child's parents refused to give their consent for this procedure. She was then taken home, where she was seen by numerous consultants.

The subsequent course of the child's condition was followed only by personal communication with the physician in charge of the case. In December a discrete cervical gland was palpable on the left. A biopsy of this gland was performed, and the histologic preparations made from this tissue revealed tumor cells characteristic of a sympathicoblastoma. There was no response to the therapy instituted, and death occurred several months later.

COMMENT

The four cases reported have many symptoms in common although the location of the tumor was different in each instance. These reports illustrate the fact that tumors of sympathetic tissue origin may occur at various locations within the body, producing a multiplicity of symptoms. Although this type of tumor is relatively rare, the possibility of its presence should be kept in mind in the differential diagnosis of lesions of the spine.

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ABSTRACT OF DISCUSSION

Dr. Frank R. Ober, Boston: We have had fifty-five cases of sympathicoblastoma at the Boston Children's Hospital and I would like to show some lantern slides illustrating how the bones are affected. A girl aged 13 months entered the hospital with a lump in her head. These slides show a tumor in the skull, a bone tumor at the upper end and lower end of the tibia and the adrenal gland with a large tumor. The next slide shows the cellular formation, which occurs almost always in rosettes with tumor tissue and very little tissue in between. The skull slide shows the destruction taking place in the calvarium. The anterior view shows the fontanels much larger than normal. The next slide shows the peculiar symmetric distribution of this tumor in the bony skeleton, especially at the upper and lower end of the long bones. This first child died within four days of admission. The patient had involvement of practically all the tissue in the body, the lymphatic system, the brain and so on. The second case is one of hemocytoblastoma in a child aged 15 months. The x-ray diagnosis was neuroblastoma sympathicum. The blood examination showed abnormal cells of a peculiar nature with leukemia and some eosinophils. Biopsy of the forehead was done and histologic examination revealed a malignant tumor which could not be classified. The kidneys, spleen, liver, lungs, submaxillary glands, dura, cranial bones, pancreas, bone

marrow and almost all the organs including the vertebrae and extremities, except the thyroid, the parathyroid, the pituitary and the central nervous system were involved. The x-ray appearance of this tumor is similar to that of the case of sympathicoblastoma. The sympathicoblastoma is a very malignant tumor but in a small number of cases in which massive hemorrhage was present the tumor disappeared and the patient remained alive after a number of years. We have had at least two examples in which the tumor proved to have the typical histology of the neuroblastoma, altered its nature after a period of time and became a benign ganglioneuroma. The finding of both benign and malignant representatives of the neuroblastoma series in one case is of considerable interest and should lead to conservative prognosis in such cases in which one tumor is known to be a ganglioneuroma and in which there is another tumor elsewhere in the body and not connected with the first mass. The second tumor may prove to be a malignant neuroblastoma. One must keep in mind, however, that there may be other forms of tumors involving bone which act in exactly the same manner as the neuroblastoma.

DR. G. K. CARPENTER, Nashville, Tenn.: Sympathicoblastomas may produce a great variety of symptoms, depending on the location. Often the first and only symptoms result from metastases, usually lymphatic, but may be circulatory or both, to various parts of the body. These tumors frequently metastasize to bone, particularly to the skull, and less frequently to the pelvis, spine, ribs, sternum and long bones. Those cases arising from the vicinity of the dorsal and lumbar sympathetic ganglion may early invade the spinal canal with resulting spinal nerve root and spinal cord symptoms. In the four cases presented by Dr. Chandler and Dr. Norcross the early symptoms in each case indicated the presence of a lesion of the spine. It is therefore evident that these tumors, either because of their location or because of the site of the metastasis, may confront the orthopedic surgeon with diagnostic difficulties. The adrenal medulla is frequently the site of the primary tumor, and in these cases the neoplasm usually occurs in infancy or early childhood. The symptoms in the cases of adrenal origin are usually produced by the metastases and are classified as either the Hutchison type, the Pepper type or the mixed type, depending on the location of the predominance of the metastases. If the tumor arises from the left adrenal, there are often metastases to the skull and other bones, the Hutchison type. If the tumor arises from the right adrenal there are often metastases to the liver, the Pepper type. Sympathicoblastomas as a whole are rather a confusing group of tumors. The adrenal group, which originates from the sympathetic tissue of the medullary portion of the adrenal gland, is unusual in that it occurs early in life and in most instances it metastasizes early, probably because the adrenal medulla where it arises is so vascular. These tumors often metastasize in so uniform a way and produce such characteristic symptoms that a fairly positive diagnosis may be made without biopsy or autopsy. The Hutchison type especially may be diagnosed frequently without the aid of a biopsy or autopsy. Tumors that do not originate in the adrenal are much more difficult to diagnose, as the site of origin may be any place in the body where sympathetic nervous tissue is located. The symptoms must therefore depend on the location of the tumor. None of the four cases presented in this paper apparently originated from the adrenal gland. Even though the adrenal group is more frequently encountered, it is important to the orthopedic surgeon to keep in mind that occasionally they do originate from sympathetic nervous tissue near or within the vertebral column, with resulting spinal or vertebral symptoms.

DR. FREMONT A. CHANDLER, Chicago: It would be presumptuous for any orthopedic surgeon to take over the field of the neuropathologist, and this has not been our intention. I am delighted to have Dr. Ober report on the large number of cases which were seen in the clinic in Boston. The cases which we reported came to us primarily because of a complaint that overlapped into the field of orthopedic surgery. The knowledge of such a tumor as a possible explanation of these complaints is the point we are trying to emphasize in this paper. There is plenty of dissension among neuropathologists as to the origin, classification and the like, and it would be out of our realm to emphasize that point. That the vast majority arise in the adrenal gland is well known, and the cases reported in the literature are numerous. The cases found as metastatic lesions are also numerous. As far as we can tell with this small series, the pathologic condition that we have encountered is primary. Dr. Cushing found one case which would coincide with the first case as arising within the spinal canal. It is interesting to learn from Dr. Carpenter's discussion that in their clinic they have made diagnoses of only two cases in ten years. These cases chanced to fall within our field within the course of one year. We were awakened to the possibility and I think because of that recognized them.

THROMBOPHLEBITIS

THE ROLE OF VASOSPASM IN THE PRODUCTION OF THE CLINICAL MANIFESTATIONS

ALTON OCHSNER, M.D.
AND
MICHAEL DEBAKEY, M.D.
NEW ORLEANS

There are few catastrophes in medicine as pathetic as the consequences of thrombo-embolic phenomena. Nothing is more tragic than the sudden death of a patient ready to go home after a relatively satisfactory postoperative convalescence. Although less dramatic and less severe only in magnitude, other thrombophlebitic sequelae may be of almost as great significance because of the persistence of disability during the entire lifetime of the person. That these complications occur not infrequently is exemplified by the observations of Snell [1] at the Mayo Clinic and of Dietrich [2] in Germany that in approximately 8 per cent of all autopsies pulmonary embolism was considered the cause of death. Postoperative thromboses are of frequent occurrence, as illustrated by the relatively high incidence of 0.6 per cent in a collected series of 133,458 operations.[3] No less significant to the surgeon is the fact that these postoperative vascular complications are apparently increasing. According to Höring,[4] Reye [4] and Adolph and Hopmann,[5] the incidence of postoperative thromboembolism increased fivefold from 1920 to 1927. During the thirteen year period 1913-1926 Fahr [4] found an increase in incidence of more than ten times. Undoubtedly, as has been emphasized by Matas,[6] the greater number of operations now performed is in part responsible for this augmentation. That this is not entirely

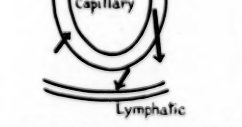

Fig. 1.—Diagram of normal physiologic relationship of intravascular and perivascular fluids. As indicated by the arrows, normally there exists a balance between the amount of fluids leaving the blood vessels and entering the tissues and that leaving the tissues and entering the blood and lymphatic vessels.

From the Department of Surgery, Tulane University of Louisiana School of Medicine.

Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the authors' reprints.

Read before the Section on Surgery, General and Abdominal, at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 18, 1939.

1. Snell, Albert: Relation of Obesity to Fatal Postoperative Pulmonary Embolism, Arch. Surg. **15**: 237 (Aug.) 1927.

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the cause of the increased incidence of thrombosis and embolism is evidenced by Burke's [7] and Martini and Oppitz's [8] statistical analyses, in which an increase occurred also in medical conditions.

The exact cause of thrombophlebitis remains unestablished in spite of voluminous clinical and experimental investigations. Numerous etiologic factors have been presented as possessing pathogenic significance in the development of this enigmatic phenomenon. These have been reviewed and evaluated in another publication [3] and no attempt will be made here to consider them. The concept that mechanical blockage of the venous and lymphatic systems is of primary significance in the production of the clinical manifestations in thrombophlebitis is, in our opinion, inadequate. Mechanical blockage produced by an intravascular clot or the obliteration of the lymphatic channels by perivenous inflammatory processes is in itself of little import. As a result of our clinical and experimental investigations we are of the opinion that the factor of vasospasm, which was first suggested by Leriche,[9] is of much greater significance in the production of the clinical manifestations of thrombophlebitis.

In the light of our recent clinical and experimental investigations we believe that it is necessary to consider the mechanism of the development of the manifestations in thrombophlebitis on the basis of a disturbed physiology rather than on an anatomic-pathologic foundation. Previously it was thought that the swelling of an extremity associated wth a thrombophlebitic process was the result of increase in perivascular tissue fluid, which in turn resulted from an increase in the venous pressure produced by the mechanical blockage of the involved vein. Presumably an increased transudation of vascular fluids into the perivascular spaces occurs because of the disturbance in the relationship between the pressures within the vessel and the pressure of the tissue fluid. That this explanation is inadequate is substantiated by the fact that mechanical ligation of the main venous trunk of an extremity is not followed by edema. Matas [10] originally suggested that postphlebitic edema, which may assume elephantoid states, may be due to lymph stasis. Reichert [11] and Homans,[12] on the basis of their experimental and clinical investigations, believe that venous obstruction is not sufficient to produce the edema in thrombophlebitis but that the edema is the result of perivenous lymphatic obstruction. In most instances, however, the experimentally produced edema was only temporary, subsiding within a few days. Zimmermann and de Takats,[13] on the basis of their investigations, are of the opinion that lymphatic obstruction plays a minor role but that venous obstruction is the most important factor in the production of edema. Leriche and Jung [14] and Fontaine and Pereira [15] concluded from their experimental observations that obstruction of the lymphatics was of little significance in the development of edema in thrombophlebitis.

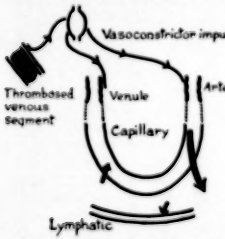

Fig. 2.—Diagram of production of edema in thrombophlebitis. As shown by the arrows, there is a greater amount of fluids leaving the blood vessels and entering the tissues than that leaving the tissues and entering the blood and lymphatic vessels. The increased transudation of fluids from the vascular system into the perivascular spaces is due to several factors. As a result of vasoconstrictor impulses initiated in the thrombosed venous segment there is produced a reflex vasospasm involving the arterial and the venous elements of the vascular tree. Thus there occurs marked increase in venous pressure with consequent augmentation of filtration pressure and relative anoxia of capillary endothelium, both of which favor an increased transudation of vascular fluid into the perivascular tissue. The marked diminution of peripheral pulsations consequent to vasospasm and increased venous pressure results in a decrease in lymph flow and a stagnation of tissue fluids.

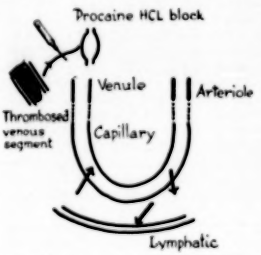

Fig. 3.—Diagram of mechanism by which procaine hydrochloride block produces improvement in thrombophlebitic edema. Interruption of the vasoconstrictor impulses results in a decrease in venous pressure, increased vascularity and increased peripheral pulsations. The diminished venous pressure results in a decreased filtration pressure and thus tends to prevent the increased transudation of vascular fluid into the perivascular spaces. Increased vascularity reestablishes normal oxygenation of the vascular endothelium and permits return of normal permeability, which prohibits excessive transudation. Increased pulsations favor removal of perivascular fluids by increasing lymph flow.

Based on our clinical and experimental observations, we believe that vasospasm, resulting from impulses originating in the involved venous segment, is one of the most important factors in the production of the clinical manifestations. These vasospastic influences probably affect both arterioles and veins. That a localized thrombophlebitic process can initiate a marked vasospasm is illustrated by numerous reports.[16] In

7. Burke, Mead: Thrombosis: A Medical Problem, Am. J. M. Sc. **196**: 796 (Dec.) 1938.

8. Martini, P., and Oppitz, R.: Untersuchungen über die Zunahme der Thrombosen und Embolien in den letzten Jahren, München. med. Wchnschr. **75**: 1593 (Sept. 14) 1928.

9. Leriche, René: Traitement chirurgical des suites éloignées, des phlébites et des grands oedèmes non médicaux des membres inférieurs, Bull. et mém. Soc. nat. de chir. **53**: 187 (Feb. 19) 1927. Leriche, René, and Kunlin, J.: Traitement immédiat des phlébites post-opératoires par l'infiltration novocainique du sympathique lombaire, Presse méd. **42**: 1481, 1934. Leriche.[20]

10. Matas, Rudolph: The Surgical Treatment of Elephantiasis and Elephantoid States Dependent upon Chronic Obstruction of the Lymphatic and Venous Channels, Am. J. Trop. Dis. **1**: 60, 1913.

11. Reichert, F. L.: The Regeneration of the Lymphatics, Arch. Surg. **13**: 871 (Dec.) 1926; The Recognition of Elephantiasis and of Elephantoid Conditions by Soft Tissue Roentgenograms with a Report on the Problem of Experimental Lymphedema, ibid. **20**: 543 (April) 1930.

12. Homans, John, and Zollinger, Robert: Experimental Thrombophlebitis and Lymphatic Obstruction of the Lower Limb, Arch. Surg. **18**: 992 (April, pt. 2) 1929. Homans, John: Phlegmasia Alba Dolens and the Relation of the Lymphatics to Thrombophlebitis, Am. Heart J. **7**: 415 (April) 1932; footnote 24.

13. Zimmermann, L. M., and de Takats, Geza: The Mechanism of Thrombophlebitic Edema, Arch. Surg. **23**: 937 (Dec.) 1931.

14. Leriche, René, and Jung, Adolphe: Recherches expérimentales sur les oedèmes chirurgicaux des membres d'origine phlébitique, J. de chir. **37**: 481 (April) 1931.

15. Fontaine, R., and Sousa Pereira: Oblitérans et résections veineuses experimentales; contribution à l'étude de la circulation collatérale veineuse, Rev. de chir., Paris **75**: 161 (March) 1937.

16. These reports include:
Trémolières, F., and Véran, P.: Syndrome d'oblitération artérielle du membre inférieur droit apparu au cours d'une phlébite superficielle et profonde avec embolies pulmonaires; Effet thérapeutique de acétylcholine, Bull. méd., Paris **43**: 1101 (Oct. 19) 1929.
Audier, M.: La symptomatologie artérielle des phlébites des membres et de leurs séquelles, Progrès méd., May 4, 1935, pp. 729-738.
Nicole, R.: Arteriospasmus bei akuter Venenthrombose, Schweiz. med. Wchnschr. **65**: 676 (July 27) 1935.
Läwen, A.: Thrombectomy in Venous Thrombosis and Arteriospasm, Arch. f. klin. Chir. **180**: 53, 1937; Ueber Thrombectomie bei Venenthrombose und Arteriospasmus, 61. Tag. d. deutsch. Ges. f. Chir., Berlin, 1937.
Lindgren, S.: Arteriensymptome bei den tiefen Beinthrombosen, Upsala läkaref. förh. **42**: 415, 1937.
Audier, M.: L'acétylcholine dans le traitement des phlébites des membres, Monde méd. **48**: 17 (Jan. 1) 1938.
Chevrier, in discussion on Grégoire.[17]
Mondor, in discussion on Grégoire.[17]
Pesnel, P.: Arterial Spasm of Lower Extremities Following Phlebitis; Study Apropos of Case, Semaine d. hôp. de Paris **14**: 378 (Oct. 1) 1938.
Läwen.[17]
Pampari.[17]
Uggeri and Massone.[17]

many instances the vasospasm has been so marked that the condition was originally considered to be one of arterial embolism.[17] In some instances actual gangrene occurred.[18] Experimentally we[19] have been able to show that localized chemical endophlebitis would result

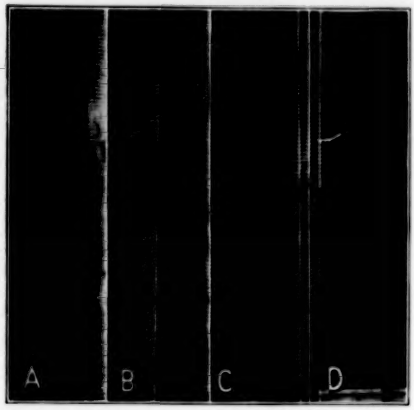

Fig. 4.—Tracings showing volume of pulsations in hind foot of a dog, as determined plethysmographically. *A*, normal pulsations; *B*, ligation of femoral vein produced marked diminution in volume of pulsations; *C*, injection of 40 per cent aqueous solution of sodium salicylate produced further diminution in the pulse volume; *D*, interruption of nerve pathways by local infiltration of procaine hydrochloride around site of irritated segment abolished effect of chemical phlebitis.[19]

in marked arteriolar vasospasm of such severe degree that practically all pulsations were lost. That this mechanism is the result of vasoconstrictor impulses originating in the involved segment and transmitted over the sympathetic nervous system has been proved by the fact that it can be prevented by sympathectomy or by blocking the sympathetic nerves with procaine hydrochloride.

In order to understand the mechanism by which vasospasm can produce edema it is necessary to review the physiologic relationship of intravascular and perivascular fluids. Normally a balance exists between the amount of fluid going out of the vessels into the tissues and the amount going out of the tissues into the vessels (fig. 1). The passage of fluid from the vessels into the perivascular spaces is dependent on the differences in the pressures (filtration pressure) in the intravascular and perivascular spaces, being considerably greater in the former than in the latter. On the other hand, the passage of fluid out of the tissues is due to two factors: (1) the passage of fluid from the perivascular spaces into the vascular lumen (because of the difference in the osmotic pressures in the intravascular and perivascular spaces, which is considerably greater in the former than in the latter) and (2) the lymph flow. The transudation of fluid from the vascular system into the perivascular spaces is increased by a number of factors. Whenever there is an increase in venous pressure there occurs an increase in filtration pressure, which favors the transudation of fluid from the vascular into the perivascular spaces. Another prominent factor in the production of increased transudation of fluid from the vascular system into the perivascular spaces is anoxia of the capillary endothelium, in which the normal permeability of the endothelium is lost.

Edema is greatly influenced by the presence or absence of normal arteriolar pulsations, as proved by the recent experiments of McMaster and Parsons.[20] These investigators showed that in the absence of pulsations there was almost no movement of lymph but that in the presence of pulsations the lymph flow was

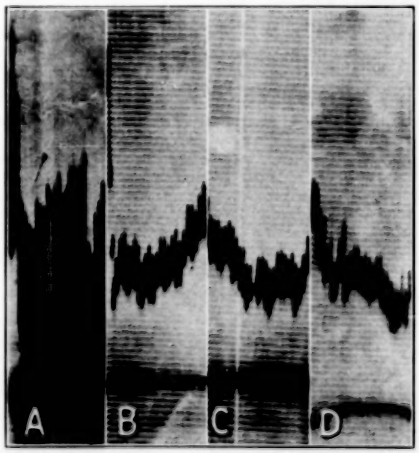

Fig. 5.—Tracing showing volume of pulsations in hind foot of dogs, as determined plethysmographically. Experiment similar to that outlined in figure 4 except that lumbar sympathetic ganglions and intervening chain had been resected twenty-four hours previously. Whereas following ligation (*B*) there is diminution in volume of pulsations, following injection of sodium salicylate (*C*) the volume of pulsations is not decreased.[19]

rapid. As already mentioned, it has been repeatedly observed clinically and experimentally that vasospasm occurs during the course of a thrombophlebitic process.

17. These include:
Lauen, A.: Arteriospasmus bei akuter massiver Thrombose der V. femoralis, Zentralbl. f. Chir. **61:** 1681 (July 21) 1934.
Pampari, D.: Thromboflebite acuta degli arti e fenomeni pseudo-embolici, Policlinico (sez. chir.) **45:** 476 (Oct.) 1938.
Uggeri, C., and Massone, A.: Arterial Symptoms from Phlebitis of Limbs, Arch. ital. di chir. **40:** 429, 1938.
Wertheimer, P., and Frich, P.: Thromboses veineuses, oblitérations arterielles et gangrène des membres, Presse méd. **43:** 1004 (June 22) 1935.
Audier, M.: Thromboses veineuses aiguës simulant l'embolie artérielle des membres, Paris méd. **1:** 384 (May 2) 1936.
Fontaine, R.; Israel, L., and Sousa Pereira: A propos d'un cas de thrombose de la veine cave inférieure, Thrombo-phlébites simulant les embolies artérielles et gangrènes d'origine veineuse, J. de chir. **47:** 926 (June) 1936.
Audier, M., and Haimovici, H.: Gangrene of Venous Origin in Extremities, with Special Reference to Role of Phlebitis and Obliteration, Presse méd. **46:** 1043 (Sept. 21) 1938.
Banzet, Paul, in discussion on Gregoire, Mém. Acad. de chir. **64:** 367 (April 27) 1938.
Gregoire, Raymond: La répercussion de l'inflammation des veines sur le système artériel collatéral, Mém. Acad. de chir. **64:** 363 (April 27) 1938.
Grégoire, Raymond: Blue Phlebitis (Phlegmasia Cerulea Dolens), Presse méd. **46:** 1313 (Sept. 3) 1938.
Trémolières and Véran.[17] Lindgren.[17] Chevrier.[17] Bergeret, Guillaume and DeLarue.[18]

18. Bergeret, A.; Guillaume, A. C., and DeLarue, J.: Gangrène ischemique de membre inférieur par thrombose oblitérante de la totalité des veines, Ann. d'anat. path. **15:** 536 (May) 1932. Tilley, J. H.: Gangrene of Extremities in Thrombophlebitis, Am. J. Obst. & Gynec. **36:** 157 (July) 1938.

19. DeBakey, Michael; Burch, G. E., and Ochsner, Alton: Effect of Chemical Irritation of Venous Segment on Peripheral Pulse Volumes, Proc. Soc. Exper. Biol. & Med. **41:** 585 (June) 1939.

20. Parsons, R. J., and McMaster, P. D.: The Effect of the Pulse upon the Formation and Flow of Lymph, J. Exper. Med. **68:** 353 (Sept.) 1938. McMaster, P. D., and Parsons, Robert J.: The Effect of the Pulse on the Spread of Substances Through Tissues, ibid. **68:** 377 (Sept.) 1938.

As a matter of fact the cutaneous pallor of the involved extremity in femoro-iliac thrombophlebitis is probably the result of arteriolar spasm. We have observed this repeatedly, and in a number of cases herein reported there were no pulsations in the dorsalis pedis and posterior tibial arteries, and volume pulsations of the

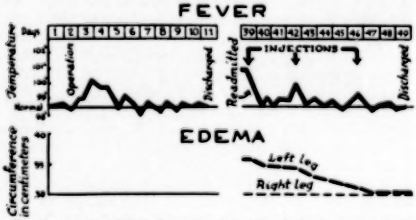

Fig. 6 (case 1).—Effect of procaine hydrochloride block of sympathetics on temperature and edema in thrombophlebitis. Epigastric herniaplasty was performed May 5, 1938, and the patient was discharged nine days after the operation. Thrombophlebitis developed in the left leg June 4, approximately four weeks after the operation. Lumbar sympathetic blocks were performed June 11, 14 and 18. The temperature, which previous to the blocks ranged between 100 and 101.8 F., rapidly returned to normal. Edema of the leg subsided completely within eight days after the first block.

digits of the involved extremity were absent as determined plethysmographically. It is probable that the vasospastic factor involves the venous as well as the arterial side of the circulatory bed. This contention is substantiated by the definite decrease in the venous pressure following blocking of the sympathetic nervous system and has been demonstrated phlebographically by dos Santos.[21]

As a result of the vasoconstrictor impulses initiated in the thrombosed segment there occur a number of factors which tend to increase the amount of perivascular fluid, i. e. edema (fig. 2). Venous spasm, in addition to the mechanical blockage of the involved

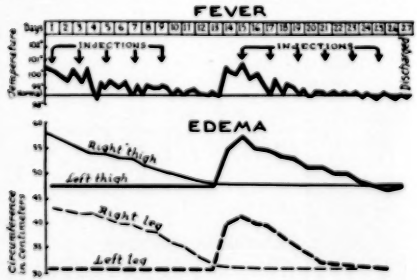

Fig. 7 (case 3).—Effect of procaine hydrochloride block of sympathetics on temperature and edema in thrombophlebitis. Thrombophlebitis of the right lower extremity developed eighteen days after cholecystectomy. Right lumbar sympathetic blocks were performed as indicated by arrows. Fever rapidly subsided and edema disappeared twelve days after treatment was begun. Thrombophlebitis of the left lower extremity then suddenly developed and the left lumbar sympathetic blocks were performed. The temperature returned to normal within five days after treatment was begun and edema in the left leg disappeared within ten days.

segment of vein, results in a marked increase in intravenous pressure. In several of our cases in which venous pressure determinations were made they were found to be four and five times the normal values. This increase in venous pressure augments the filtration pressure and favors the increased transudation of vascular fluid into the perivascular spaces. Because of the associated arteriolar spasm and evidences of diminished vascularity there probably occurs a relative anoxia of the capillary endothelium, favoring increased permeability of this membrane and consequent increased transudation of vascular fluid into the perivascular spaces (fig. 2). The reflex vasoconstriction of the arterioles and the increased venous pressure produce a marked diminution in the arteriolar pulsations which are so essential for the flow of lymph, as shown by McMaster and Parsons.[20] This results in a decrease in lymph flow and stagnation of tissue fluids. Because of the accumulation of proteins in the perivascular fluid a vicious circle is set up in that the osmotic pressure of the perivascular fluids approaches that of the fluid within the vessels, tending to prevent the reabsorption of fluid from the perivascular spaces into the vascular tree. Thus it is evident that vasoconstrictor impulses originating in a thrombophlebitic process are of great importance in the production of thrombophlebitic manifestations.

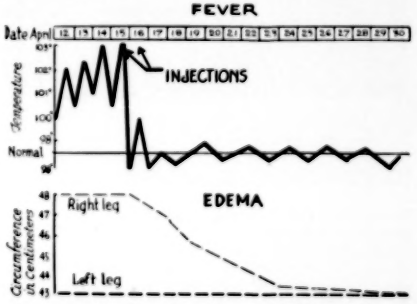

Fig. 8 (case 15).—Effect of procaine hydrochloride block of sympathetics on temperature and edema in thrombophlebitis. Within forty-eight hours after sympathetic blocks the temperature dropped from 103 F. to normal and remained so. Within seven days after treatment was begun practically all edema in the involved extremity had disappeared.

Not infrequently, following the subsidence of the acute inflammatory process, the patient continues to have considerable edema and other undesirable sequelae persisting for the rest of his life. In such an instance, probably the persistence of the symptoms is due to the perivascular fibrosis the production of which is favored by lymph stasis. The mechanical blocking of the veins and the perivascular lymphatics probably interferes with the lymphatic flow and is responsible for the retention of fluid in the perivascular spaces. Also the perivascular fibrosis that replaces the thrombophlebitic inflammatory exudate may mechanically interfere with venous and lymphatic drainage. This contention is supported by the fact that in isolated instances symptoms are relieved by "unbridling" the vein, as practiced by Leriche,[22] Jennings[23] and Homans.[24] On the other hand, a much more desirable result theoretically could be obtained if the vicious circle of increased transudation of intravascular fluid into the perivascular spaces could be prevented and at

21. dos Santos, J. C.: La phlébographie directe; conception, technique, premiers résultats, J. internat. de chir. **3**: 625, 1938.

22. Leriche, René: Sur l'importance de la périphlébite dans la genèse des accidents tardifs consecutifs aux oblitérations veineuses, Bull. et mém. Soc. nat. de chir. **53**: 561 (April 16) 1927.

23. Jennings, J. E.: Choked Leg, Ann. Surg. **98**: 928 (Nov.) 1933.

24. Homans, John: Thrombophlebitis of the Lower Extremities, Ann. Surg. **87**: 641 (May) 1928.

the same time the normal flow of lymph reestablished. If the hypothesis that the vicious circle resulting in the increased accumulation of perivascular fluids is both directly and indirectly due to vasospasm resulting from impulses originating in the involved segment, the vicious circle should be broken by blocking the sympathetic nervous system and preventing the vasospastic influences from reaching the peripheral vessels.

That such can be accomplished, we have demonstrated both experimentally and clinically. Following blocking of the sympathetic nervous system the vasospasm is overcome, resulting in a decrease in the venous pressure, which in turn diminishes the filtration pressure and tends to prevent the increased transudation of vascular fluid into the perivascular spaces. Also the return of normal arteriolar pulsations reestablishes oxygenation of the vascular endothelium, permitting a return of the normal permeability of this membrane, which prohibits an excessive transudation (fig. 3). The

Fig. 9 (case 10).—The lower extremities of patient with right femoroiliac thrombophlebitis. *A*, before treatment was begun: The marked swelling of the entire right lower extremity is readily apparent. *B*, after treatment was instituted: All previous manifestations of thrombophlebitis in the right lower extremity have disappeared. The patient had been walking about in the ward for two weeks before this picture was made.

return of normal pulsation favors the removal of the perivascular fluid by increasing the flow of lymph.[20] That blocking of the sympathetics increases lymph flow has been demonstrated by Monteiro.[25] The diminution in the quantity of the perivascular fluid and the decrease in its protein content reestablish the normal relationship between the osmotic pressures of the intravascular and perivascular fluids, favoring the absorption of the latter into the vascular tree. As a result of the breaking of the vicious circle and reestablishment of the normal relationship, the abnormal transudation is prevented and the perivascular absorption is promoted (fig. 3).

In an experimental investigation [19] which has been reported elsewhere it was found that after ligation of the femoral vein in dogs there resulted a marked diminution in volume pulsations of the corresponding foot and that a chemical irritant (sodium salicylate, 40 per cent) placed either in the lumen or in the perivascular tissue of an isolated segment of this vein produced further diminution in the pulse volume (fig. 4). However, interruption of nerve pathways by local infiltration of procaine hydrochloride around the site of the irritated segment (fig. 4) or by resection of the lumbar sympathetic ganglions and chain (fig. 5) abolished or prevented this effect. Similar observations have been

Fig. 10 (case 11).—The lower extremities of patient with right femoroiliac thrombophlebitis. *A*, before treatment was begun: There is marked swelling of the involved extremity. *B*, eleven days after the institution of therapy: All previous manifestations of thrombophlebitis have disappeared.

made on patients suffering from thrombophlebitis, who showed a definite decrease in the volume pulsations of the digits of the involved extremity; after procaine block of the lumbar sympathetic nerves the volume pulsations returned to normal.

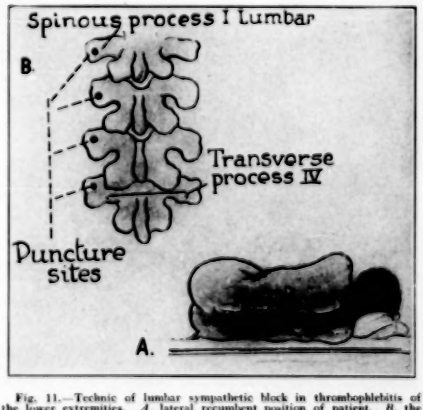

Fig. 11.—Technic of lumbar sympathetic block in thrombophlebitis of the lower extremities. *A*, lateral recumbent position of patient. *B*, the cutaneous puncture sites lie on a horizontal level with and approximately two and one half fingerbreadths lateral to the upper part of the spinal processes of the first four lumbar vertebrae. The respective transverse processes lie immediately beneath these puncture sites.

In the past twelve months we have treated fifteen patients with thrombophlebitis of the extremities, in two cases bilateral, making seventeen thrombophlebitic processes which have been treated by procaine

25. Monteiro, Hernani: La lymphangéiographie chez de vivant méthode, résultats et applications, Bruxelles-méd. **19**: 205 (Dec. 18), 242 (Dec. 25) 1938.

hydrochloride block of the regional sympathetic ganglions. Of these seventeen thrombophlebitic processes, sixteen involved the lower extremities and one the upper extremity. The thrombophlebitic process followed an operative procedure in seven instances, of which two were in the pelvis and five in other parts of the body. Two followed cholecystectomy, one an appendectomy, one a hernia and one a plastic operation on an amputated stump which previously had been infected. Four were postpartal, one followed typhoid, two followed infection and one followed trauma. In most of the cases the thrombophlebitis was severe, as evidenced by the febrile reaction and the marked edema. The highest temperature was 104.8 F., the lowest 99.6. In ten cases the temperature was 101 F. or over, in six 102 or over, and in five 103 or over. In only two was the temperature less than 100 F. In all but one there was considerable swelling. The increase in the circumference of the involved extremity as compared with that of the normal side varied from several centimeters to as much as 9 cm. There was considerable variation in the length of time that elapsed between the onset of the thrombophlebitic process and the institution of therapy. The longest period was twenty-eight days and the shortest one day. Nine patients had been ill for a week or longer, three were ill for two weeks or longer, and only two had been sick less than three days at the time therapy was instituted. The length of time that elapsed between the onset of the thrombophlebitic process and the institution of therapy is important, we believe, because the earlier the therapy is instituted the better will be the result.

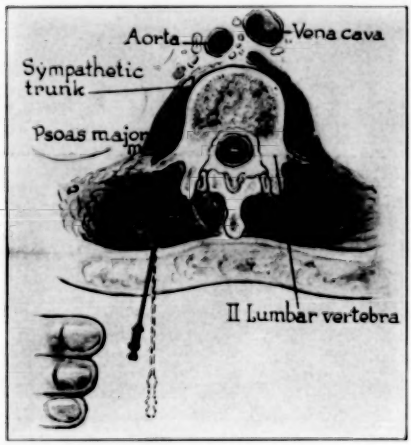

Fig. 12.—Cross section through second lumbar vertebra showing technic of lumbar sympathetic block. A needle is inserted vertically until transverse process of vertebra is reached (represented by dotted line) and then direction of the needle is changed slightly and inserted two and one half fingerbreadths beyond the transverse process so that its point lies near the anterolateral surface of the body of the vertebra where the sympathetic chain lies.

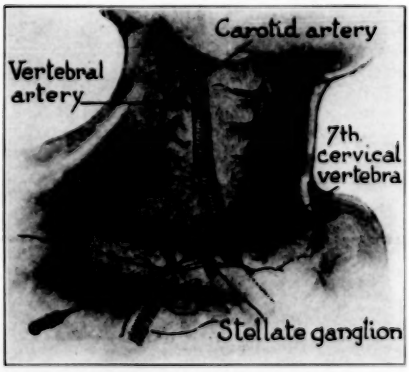

Fig. 13.—Technic of stellate ganglion block by anterior approach. Cutaneous site of puncture is approximately 1 cm. medial to midpoint of and immediately over clavicle. A needle is inserted on horizontal level with upper border of clavicle and directed posteriorly and medially at a 45 degree angle with the midline of the body.

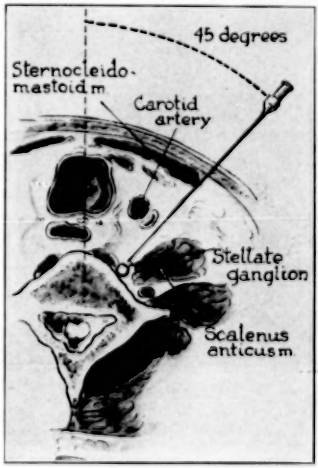

Fig. 14.—Cross section of neck showing technic of stellate ganglion block by anterior approach. Needle inserted posteriorly and medially at a 45 degree angle with the midline so that the point of the needle impinges against the anterolateral surface of the body of the seventh cervical vertebra or at the junction between the seventh cervical and the first thoracic vertebra, where the stellate ganglion lies.

In the seventeen thrombophlebitic processes, the number of injections necessary to produce relief of all manifestations varied. Six had only one injection, five had two injections, three had three injections and one each had four, five and six injections, respectively. Thus, relief was obtained in 65 per cent of the cases by two injections or less.

The results obtained by procaine hydrochloride block of the regional sympathetic ganglions were quite dramatic. There was relief of pain within fifteen to twenty minutes after the injections. In all six cases in which a single injection was given the relief of pain was permanent after the injection. Of the remaining eleven thrombophlebitic processes in which more than one injection was given there was com-

plete and permanent relief of pain after the second injection in eight and after the third injection in three. In no instance did the pain persist after the second injection. Within twenty-four hours after procaine hydrochloride block there was definite improvement in the patient generally, as evidenced by a decrease in pyrexia, which usually persisted (figs. 6, 7 and 8). Whereas in the beginning the injections were made more or less haphazardly, we now believe that injections should be made every twenty-four to forty-eight hours as long as the patient has any fever. The length of time elapsing between the institution of therapy and complete subsidence of all febrile reactions varied. Four patients had fever for only one day after the institution of therapy, four had fever for two days, one for three days, two for four days, two for five days, one for seven days and two for eight days. It is significant that approximately 50 per cent of the patients were fever free within forty-eight hours after the institution of therapy. One patient who had a pulmonary infarction continued to have fever for thirty-one days, but this was undoubtedly due to the pulmonary complication, because all evidences of thrombophlebitis subsided completely within nine days.

Whereas the length of time swelling exists after the onset of thrombophlebitis varies considerably, in general a severe thrombophlebitic process is complicated by swelling of the extremity for long periods. This may persist throughout the life of the individual and is one of the most distressing manifestations of the process. Whereas it cannot be definitely determined what the ultimate outcome will be in the cases herein reported, it is probable that there will be no subsequent swelling, because in every instance the patient was up and about the ward for several days before returning home, and in no instance was there any edema at the time of discharge (figs. 9 and 10). Three patients have been seen nine months, two months and five weeks, respectively, after discharge from the hospital and all have remained free from any manifestations. In one case the edema had completely disappeared in three days, in five after four days, in one after eight days, in two after nine days, in three after ten days and in one each after eleven and twelve days (figs. 6, 7 and 8). One patient who was pregnant had very slight edema, and this completely disappeared within twenty-four hours.

The length of time the patient was kept in the hospital after the institution of therapy varied. The shortest time was four days. Three patients were discharged after six days, five after eight days and one each after ten, eleven and twelve days. One patient remained in the hospital for a month after the institution of therapy, being kept for two weeks after all manifestations had completely subsided in order that subsequent plethysmographic and venous pressure determinations might be made. One patient who had a pulmonary infarction remained in the hospital a total of sixty-one days; one month of this was necessitated by the pulmonary complication. She was kept in the hospital for an additional five weeks in order that subsequent observations might be made and to make certain that there would be no recurrence of her pulmonary process.

TECHNIC OF SYMPATHETIC BLOCK

In every instance in which the lower extremity was involved, the lumbar sympathetic ganglions were blocked with 1 per cent procaine hydrochloride, the posterior approach being employed, as previously described and as illustrated in figures 11 and 12.[26] For the upper extremity we prefer the anterior approach to the stellate ganglion as illustrated in figures 13 and 14.[26]

SUMMARY

1. The concept that mechanical blockage of the venous and lymphatic systems is of primary significance in the production of the clinical manifestations in thrombophlebitis is, in our opinion, inadequate.

2. Based on recent clinical and experimental investigations, we believe that many of the symptoms and signs are due to vasospasm of the arterial and venous systems and that the vasoconstricting impulses originate in the thrombophlebitic segment.

3. As the result of vasospasm there result increased filtration pressure, relative anoxia of the capillary endothelium and diminution in the flow of lymph, all of which increase the amount of perivascular fluid.

4. By interrupting the vasoconstrictor impulses with procaine hydrochloride infiltration of the sympathetic ganglions, there is produced a reestablishment of the normal exchange of intravascular and perivascular fluids.

5. Fifteen patients with seventeen thrombophlebitic processes have been treated by procaine block of the sympathetics. These cases are characterized by the prompt and permanent relief of all clinical manifestations in contrast with the usual case of phlegmasia alba dolens, in which there is pyrexia for from four to six weeks and the likelihood of persistent undesirable sequelae such as edema, varicosities and ulceration.

6. There was prompt and permanent relief of pain in all instances.

7. In half the cases the temperature returned to normal within forty-eight hours and in the other half within one week.

8. In more than half the cases the edema completely subsided in eight days and in the remaining ones within twelve days.

9. Sixty per cent of the patients were discharged from the hospital as cured within eight days after the institution of therapy.

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ABSTRACT OF DISCUSSION

DR. GEZA DE TAKATS, Chicago: The dramatic results obtained by the authors in the treatment of thrombophlebitis deserve the widest attention. This concept of reflexes originating from the site of a vascular block has been fruitful in the treatment of all acute vascular occlusions. Thus, in peripheral arterial occlusions the shutting down of the collateral pathways contributes considerably to the diminished blood flow to the affected limb. In pulmonary embolism, as Dr. Fenn and I have shown, the vagal reflexes originating from the occluded pulmonary artery radiate to the heart, bronchi and gastrointestinal tract and again greatly add to the plight of the patient. In thrombophlebitis the edema and pain have been relieved by blocking the sympathetic trunks of the affected extremity. As shown experimentally, vasoconstriction was abolished and venous return was improved by a single or sometimes repeated injection of procaine hydrochloride. Arterial spasm has received a great deal of attention; this presentation emphasizes, in addition, a spasm in the veins which has received little attention. Yet all of us have seen a firm, hard cord palpable in the groin during the first few hours of thrombophlebitis disappear under heat and elevation; every one has occasionally struggled with a cubital vein which contracted after a traumatizing venous puncture and those who treat varicose veins by injection must have often seen

26. Ochsner, Alton, and DeBakey, Michael: Treatment of Thrombophlebitis by Novocain Block of Sympathetics, Surgery 5:491 (April) 1939.

the spasm of the adjoining venous segments. The release of sympathetic vasoconstriction not only decreases venous pressure, and with it the edema, but markedly increases the oxygen saturation of the venous blood and thus that of the tissue fluids as shown from our clinic a few years ago. Not infrequently the hard edema present in patients suffering from Buerger's disease and resistant to rest in bed may promptly disappear after sympathectomy. The hard traumatic edema of Sudeck's atrophy, which so often baffles the industrial surgeon, readily yields to sympathetic denervation. One point needs further emphasis. Patients do not react with the same intensity to an identical vascular accident. I have seen a complete disappearance of arterial pulses simulating arterial occlusion in a few instances; other patients, however, may react with a vasodilatation and increased temperatures. In fact, a mild, latent phlebitis may sometimes be detected by a rise in cutaneous temperatures of the thigh or toes. This premonitory vasodilatation, however, as the thrombus becomes larger or completely obturating, may give rise to a marked vasoconstriction in the same patient.

Dr. John R. Paine, Minneapolis: Despite a great deal of research, the treatment of venous thrombosis has not undergone any improvement for the past thirty years. It has seemed to me that before an adequate understanding or a proper treatment for this condition could be reached three questions would have to be answered: 1. What is the cause of the pain? 2. What is the cause of the swelling? 3. What is the difference in the pathologic process present in those cases in which thrombi are present without physical signs and those in which thrombi are associated with all the local and general signs of a severe inflammation? Dr. Ochsner appears to have adequately answered the first of these questions and possibly the second. The cause of pain is vasospasm. Whether the cause of the edema is also on the basis of vasospasm requires further proof. It would be interesting to know what the effect of the authors' treatment would be on the edema persisting in some cases after all the acute symptoms have subsided. The clinical and experimental work of Homans has indicated that in many cases the edema may be on the basis of lymphatic occlusion secondary to perivenous inflammation. This has impressed me a great deal and the evidence he has presented cannot lightly be disregarded. Dr. Bellis and I have been studying cases of chronic thrombophlebitis by means of venograms, cutaneous temperatures, venous pressures and tissue tensions. The tissue tensions have usually been within normal limits, as have the cutaneous temperatures. The venous pressures are usually slightly elevated. The venograms are difficult of interpretation but frequently show definite scattered areas of spasm in the demarcated veins. We have treated seven cases of acute thrombophlebitis of the deep veins of the legs and thirteen chronic cases by means of intermittent venous occlusion. The cuffs have been applied to the thighs and a pressure of from 70 to 80 mm. of mercury with a four minute cycle used. Treatment for from three to four hours a day has been continued for a variable period. In only two cases, both of an acute nature, have pain and discomfort not been relieved. In about half of the cases edema has been decreased. The results obtained have been due in part, we think, to the release of vasospasm. The acute cases have been treated with considerable trepidation, but embolic accidents have not occurred. The effect of this type of treatment on the pulse and temperature of the acute cases has been noteworthy.

Dr. Samuel H. Sedwitz, Youngstown, Ohio: At the clinic we have adopted the following procedure: The patient is placed in a bed and his leg is elevated at an angle of 65 degrees under a tent with heat applied and controlled by a thermostat between 96 and 100 F. We are still using leeches as advised by Dr. Ochsner some time ago. The patient is given acetyl-beta-methylcholine chloride 1:500 (mecholyl) by iontophoresis daily for twenty minutes with 30 milliamperes. When possible these patients use the oscillating bed so that their general circulation is improved. In the morning before the treatment is begun patients are given a whirlpool bath of a temperature of 110 F. for twenty minutes. This is given to increase the collateral and capillary circulation. That the circulation is increased has been verified by surface temperature and oscillometric readings. All our patients were relieved of pain within twenty-four hours. This I believe can be explained by the authors' exposition that there occurs an arterial spasm. The treatment mentioned certainly relieves any arterial spasm. The same treatment has been used for conditions in which arterial spasm occurs and has relieved the patient of pain in cases of thrombo-angiitis obliterans, embolism and arteriosclerotic thrombosis, ergot poisoning with gangrene, frost bites and Raynaud's syndrome. We have given these patients roentgen therapy along Hunter's canal and in the inguinal regions. This treatment is taken about every forty-eight hours. As soon as the patient's sedimentation time, white blood count and temperature are normal for forty-eight hours elastic bandages are applied to the legs and the patient is encouraged to get up and walk. In chronic thrombophlebitis the treatment is practically the same only in addition to use of the oscillating bed for from three to six hours three times a week there is applied intermittent venous compression cuffs, the timing of which is synchronized with the oscillations of the bed. As soon as there is a decrease in the measurements of the enlarged limb an elastic bandage is placed from the toes to the knee and the patient wears this for from six to eight weeks. If the edema persists above the knee, mecholyl is given by iontophoresis every two or three days. An elastic bandage is kept applied for a year or more until the patients can go about their duties without distressing edema above the ankles. The performance of nerve block as recommended by the authors is not without danger.

Dr. Alton Ochsner, New Orleans: The treatment used by Dr. de Takats in mild cases is a very good one. In this group of seventeen cases the only form of therapy used was rest in bed and the sympathetic block. We have not elevated the extremity or used compression bandages. Because none of our patients had edema when they got out of bed, we have not used compression subsequently and no one developed edema. In answer to Dr. Paine, I believe that the results which we have obtained in prompt relief of the clinical manifestations associated with acute thrombophlebitis indicate that vasospasm is a prominent factor in the development of these manifestations. On the other hand, I believe that in chronic thrombophlebitis in which there is perivenous fibrous tissue deposition the results from this therapy probably will not be as good. Dr. Paine has asked "What is the difference in the pathologic process present in those cases in which thrombi are present without physical signs and those in which thrombi are associated with all the local and general signs of a severe inflammation?" I agree heartily that they are not the same processes. We believe that the patient with fever, pain and swelling of the extremity has an inflammatory process involving the vein, i. e. trombophlebitis. On the other hand, as Dr. DeBakey and I have emphasized in other publications (*South. Surgeon* **8**: 269 [Aug.] 1939) the patient who develops a pulmonary embolism without antecedent manifestations of thrombophlebitis has an intravascular clot (phlebothrombosis) caused not by destruction of the vascular endothelium but by changes in the blood and minimal changes in the endothelium. Today we have been discussing only thrombophlebitis.

Three Divisions of the Health Section.—The complete organization of the Health Section, which was approved by the Assembly of the League of Nations in 1923, consisted of three divisions. The temporary committee which had directed the work of organization and the early activities continued as the directing committee. Dr. Madsen, of Copenhagen, has been the chairman of the Provisional Committee and of the permanent Health Committee since the beginning. A second body, the Consulting Committee of Experts, consisting of the directors of the International Health Office at Paris, was created to discuss such matters as might be referred to it by the Health Section of the League and to assure a free interchange of information and documents between the Paris and the Geneva institutions. The third branch is the executive staff connected with the secretariat of the League and it is composed of public health experts, statisticians and clerks who devote their entire time to the work.—Lyon, R. A.: The Development of International Health Organizations, *Ann. M. History* **1**:519 (Nov.) 1939.

MÉNIÈRE'S SYNDROME

ACID-BASE CONSTITUENTS OF THE BLOOD: TREATMENT WITH POTASSIUM CHLORIDE

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A revival of interest in the medical and surgical treatment of Ménière's syndrome has been manifest during the past decade. Dandy,[1] modifying Frazier's original operation, Coleman and Lyerly,[2] Munro,[3] Horrax,[4] Crowe [5] and others have reported successful results following cerebellar exploration and division of the vestibular branch or division of the combined vestibular and cochlear branches of the eighth nerve. An alternative procedure is destruction of the labyrinth and the ganglions of Scarpa either through the middle ear [6] or through the roof of the petrous bone.[7] Equally satisfactory therapeutic results have been obtained by Mygind and Dederding,[8] Furstenberg, Lashmet and Lathrop,[9] Brown,[10] Foldes [11] and Cawthorne and Fawcett [12] with less drastic procedures.

It is believed that none of these investigators nor any others have elucidated satisfactorily the etiology of the disease. Recently a report by Hallpike and Cairns [13] has appeared in which are described the histologic changes in the temporal bones of two patients who died after section of the eighth nerve. In each case the temporal bones on the affected side showed gross distention of the endolymph spaces together with degenerative changes in the sensory elements. Evidence that the disturbance is not exclusively a dysfunction of the endolymph system, however, lies in the fact that complete section of the eighth nerve usually stops attacks of vertigo but does not affect tinnitus. The probable explanation is that section of the eighth nerve is distal to the cells in the medulla which possess the most peripheral neurons of the cochlear apparatus but proximal to the cells in Scarpa's ganglions of the vestibular apparatus.

Since the precise nature of the disturbance remains unknown, we prefer the term Ménière's syndrome or symptom complex [9] to Ménière's disease, retaining the eponym without etiologic implications. Vertigo, tinnitus, deafness, nausea and vomiting are symptoms characteristic of the syndrome. Vertigo may be the most distressing of these and prompts the patient to seek medical advice. There is usually an exacerbation of symptoms in acute episodes. In many instances these are incapacitating and confine the patient to bed for days or even weeks. The syndrome is chronic and most of the patients whom we have seen have had symptoms for several years. We believe that the diagnosis of Ménière's syndrome is not difficult to make in most cases and only those presenting characteristic manifestations and no serious complicating conditions will be discussed.

Observations on forty-eight patients will be presented in this communication. All have been seen during the past three years by us or by our colleagues at the Massachusetts General Hospital, Boston City Hospital and allied institutions. The number is approximately equally divided between males and females. The majority of patients were in the fifth, sixth or seventh decade of life. The clinical observations on thirty-three patients are summarized in table 1. Observations on the remaining fifteen are not summarized but will be discussed briefly. Several patients who had vertigo or tinnitus for only a short time were seen during the progress of this study. Data from these are not included because of the short duration of symptoms. Undoubtedly in some of these cases the complete symptom complex, including deafness, will develop. At the time the patients were seen, however, this had not occurred. A few patients were seen who were thought to have either a brain tumor or Ménière's syndrome. Only those in whom a brain tumor was readily excluded are included in this report. Blood counts, examinations of the urine and Hinton or Wassermann reactions of the blood were negative in each case.

The observations on the acid-base constituents of the blood, total fixed base, sodium, potassium, calcium, chloride, total carbon dioxide, phosphate, protein, and nonprotein nitrogen are given in tables 2 and 3. The methods for the determination of the constituents and the average range for normals have been given elsewhere [14] and will not be repeated.

Our interest in the determination of the acid-base constituents of the blood was twofold. Several investigators have assumed that Ménière's symptom complex is associated with a disturbance of water and salt metabolism. Mygind and Dederding [15] were the first to advance this hypothesis. A waterlogged labyrinth is thought to exist and a dehydrating regimen, therefore, is indicated in treatment. Furstenberg, Lashmet and Lathrop [9] reinvestigated the problem some time later and showed evidence which indicated that

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The following persons aided in this study: Drs. F. S. Coombs and C. I. Johnson, Misses William V. Consolazio and L. J. Pecora, and Miss Elizabeth Thorogood.

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4. Horrax, Gilbert: Discussion of Certain Aspects of the Diagnosis and Treatment of Trigeminal Neuralgia and Ménière's Syndrome, Rhode Island M. J. **20**: 155 (Oct.) 1937.
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15. Mygind, S. H.: Hypertensio auris internae intermittens, Tr. Danish oto-laryng. Soc. No. 21, p. 56; Hospitalstid. **67**, 1924. Dederding, Dida: Clinical and Experimental Examinations in Patients Suffering from Mb. Menièri, Acta oto-laryng. (sup. 10) **11**: 1, 1929; Our Ménière's Treatment, ibid. **16**: 404, 1931. Mygind, S. H., and Dederding, Dida: The Significance of Water Metabolism in General Pathology as Demonstrated by Experiments on the Ear, ibid. **17**: 424, 1932. Mygind, S. H., and Dederding Dida: Ménière's Disease: II. Clinical Experiments with Reference to the Influence of the Water Metabolism on the Ear, Ann. Otol., Rhin. & Laryng. **47**: 360 (June) 1938.
16. Footnote deleted on proof.

a retention of sodium salts was of greater pathogenic significance in the production of symptoms than a retention of water. They recommended a diet with a low sodium content and intermittent periods of ingestion of ammonium chloride. The concentration of electrolytes or the degree of hydration of the blood was not reported in any of these communications.

tion is a high potassium intake.[18] Similarly, symptoms of myasthenia gravis are relieved by a high potassium diet,[19] although constant changes in the level of serum potassium have not been observed.[20]

The observations on the constituents of the blood of all the patients in this group show no consistent changes from normal. In table 2, some of the data

TABLE 1.—*Clinical Observa*

Patient	Age	Sex	Duration of Symptoms	Incapacitating	Middle Ear Infection	Symptoms*				X-Ray of Skull	Lumbar Puncture	Caloric Test
						Tinnitus	Vertigo	Vomiting	Deafness			
E. L.	49	♂	5 yr.	No	No	++	+++	+	++ right	Not done	Not done	Not done
R. B.	69	♀	4 yr.	No	No	++	++	0	No	Not done	Not done	Not done
A. A.	45	♂	9 yr.	Yes	No	+++	+++	+++	+ right	Negative	Not done	Diminution, right ear
M. F.	40	♀	5 yr.	No	No	++	++	+	+ right	Not done	Negative	Hypoactive, right ear
C. U.	35	♀	11 yr.	Yes	Bilateral	+++	+++	+++	++ right	Negative	Negative	Hypoactive, right ear
R. K.	41	♀	4 yr.	No	Chronic, right	++	++	++	+ right	Not done	Not done	Hyperactive, right ear
A. S.	62	♀	1½ yr.	Yes	No	+	++	0	No	Not done	Not done	Not done
M. A.	50	♀	6 yr.	Yes	No	+++	+++	+++	+ right	Negative	Negative	Diminution, right ear
M. R.	34	♀	1 yr.	Yes	Childhood	+++	+++	+++	+ left	Negative	Negative	Diminution, left ear
P. K.	48	♀	3 yr.	No	No	++	++	+	+ left	Negative	Not done	Not done
H. C.	31	♀	1 yr.	Yes	No	+++	+++	+++	++ right, +++ left	Not done	Negative	Not done
J. C.	60	♂	2 yr.	No	No	++	++	+	+ left	Not done	Negative	Hypoactive bilaterally
R. H.	53	♂	20 yr.	No	Childhood	++	++	++	+ left	Negative	Not done	Diminution, left ear
W. R.	41	♂	20 yr.	Yes	No	++	++	++	+ left	Negative	Not done	Diminution, left ear
L. C.	43	♂	8 mo.	Yes	No	++	+++	0	+ left	Negative	Not done	Not done
E. G.	43	♀	2½ yr.	Yes	No	++	++	+++	+ left	Not done	Not done	Not done
H. E.	49	♀	7 yr.	Yes	No	+++	+++	+++	+ right	Not done	Negative	Diminution bilaterally
G. C.	63	♂	3 yr.	No	Childhood	+	++	+	+ left, ++ right	Not done	Not done	Negative
G. B.	47	♂	4 yr.	No	No	++	++	+	+ right	Negative	Negative	Diminution, right ear
K. B.	53	♀	8 yr.	Yes	No	++	++	+	+++ left, + right	Negative	Negative	Not done
P. S.	28	♀	3 yr.	Yes	Childhood	+++	+++	+++	+ left	Negative	Negative	Negative
M. H.	63	♀	3½ yr.	Yes	Childhood	+	+++	+++	++ right	Not done	Not done	Not done
M. C.	60	♂	2½ yr.	No	Chronic, bilateral	+++	+++	+++	++ right, ++ left	Not done	Not done	Hypoactive bilaterally
J. T.	51	♂	2 yr.	Yes	No	++	++	++	+ left, ++ right	Negative	Not done	Not done
J. O.	46	♀	1½ yr.	Yes	Childhood	+++	+++	+++	+ right	Not done	Not done	Not done
D. W. J.	65	♀	8 yr.	Yes	Slight, chronic	+++	+++	+++	++ right	Negative	Negative	
M. L.	38	♀	3 yr.	Yes	No	+++	+++	+++	+ left	Negative	Negative	Diminution, left ear
G. R.	4m	♂	9 yr.	Yes	No	+++	+++	+++	+ right	Negative	Negative	Diminution, right ear
E. W. L.	57	♂	6 yr.	No	Left ear in childhood	+++	+++	++	+ left	Negative	Negative	Diminution, left ear
M. C.	53	♀	10 yr.	Yes	No	+	+++	+++	++ bilateral	Negative	Negative	Diminution bilaterally
S. W.	59	♂	7 yr.	No	Chronic, right	+++	+++	0	+ right	Negative	Not done	
A. D.	49	♀	7 yr.	Yes	No	++	++	++	+ right, + left	Not done	Not done	Not done
C. R.	45	♂	4 yr.	Yes	No	+++	+++	+++	++ right	Negative	Not done	Hypoactive, right ear

* In this table a scale of 0 to ++++ has been used to indicate severity of symptoms.

Since both regimens were therapeutically successful, it seemed to us expedient to investigate the constituents of the blood before and after treatment. Our second interest in the study of blood constituents was particularly the level of serum potassium. In a disturbance of conduction of nerve impulses, such as in familial periodic paralysis,[17] a change in concentration of serum potassium is observed. The treatment for this condi-

were collected when patients were having severe symptoms, other data when the patients were not having severe symptoms and still further data subsequent to the institution of medical treatment. Exceptions were noted on only four patients (E. L., R. B., H. C. and A. S.).

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18. Herrington, M. S.: Successful Treatment of Two Cases of Familial Periodic Paralysis with Potassium Citrate, J. A. M. A. **108**: 1339 (April 17) 1937.

19. Laurent, L. P. E., and Walther, W. W.: The Influence of Large Doses of Potassium Chloride on Myasthenia Gravis, Lancet **1**: 1434 (June 22) 1935.

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If the mechanism that produces symptoms of Ménière's syndrome were gross retention by the body of water or sodium chloride or a combination of the two, one of three changes in the serum might be observed. These are (1) an increase in concentration of sodium and total fixed base with little change in water and protein content, (2) an increase in water content with diminution in concentration of sodium, total fixed base and protein, and (3) a decrease in concentration of protein without change in concentration of sodium and total fixed base. None of these changes or others were demonstrated. At the time some of the bloods were drawn the patients had been on a low sodium diet and had been benefited by it. No diminution in concentration of sodium or significant dehydration of the blood was evident. These data suggest that gross retention of water and salt by the body is not the inciting agent in acute attacks.

Further evidence to substantiate this conclusion was obtained from the data presented in table 3. Four patients were studied to determine whether or not acute attacks could be induced experimentally. For this purpose water and one or more sodium salts were given orally or parenterally. This resulted in an increase in serum p_H and an increase in concentration of serum sodium and serum water. From 40 to 80 milliequivalents of sodium lactate, 60 milliequivalents of sodium chloride and 400 cc. of water were given intravenously and rapidly to each of the patients. Two patients received, in addition, at a subsequent experiment large amounts of sodium bicarbonate by mouth. An increase in concentration of serum sodium as great as 5 milliequivalents per liter was produced without exacerbation of symptoms. A decrease in concentration of protein with an increase in water content was observed simultaneously. In two experiments there was an increase

ions on Thirty-Three Patients

Previous Treatment	Result	High Potassium Intake: Duration	High Potassium Intake: Results	Comment
Low sodium chloride diet with ammonium chloride	Improved	Not given		
Low sodium chloride diet	Improved	Not given	.....	Benign hypertension
Low sodium chloride diet with ammonium chloride	Improved	24 mo.	Improved; four mild attacks in 2 years	Father had similar symptoms
Low sodium chloride diet with ammonium chloride	Improved	Not given		
Low sodium chloride diet with ammonium chloride	Improved	Not given		
None	.....	3 mo.	Improved; no acute attacks	
None	.....	16 mo.	Improved; omitted potassium chloride on 3 occasions with exacerbation of symptoms	Mild thyrotoxicosis
None	.....	14 mo.	Improved; exacerbation of symptoms with omission of potassium chloride	Headache for 25 years attributed to polycythaemia vera; several in family have chronic headaches
Low sodium chloride diet with ammonium chloride	No effect	14 mo.	Improved; has attacks infrequently	Mild rheumatic valvular heart disease
None	.....	12 mo.	Improved; no acute attacks	
None	.....	12 mo.	Improved; few mild attacks; omitted potassium chloride several times with exacerbation of symptoms	Congenital syphilis intensively treated since age of 12
None	.....	1 mo.	Improved; mild attacks infrequently	
Low sodium chloride diet with ammonium chloride	Improved	12 mo.	Improved; omitted potassium chloride on 3 occasions with exacerbation of symptoms	Father and grandfather had similar symptoms
Low sodium chloride diet with ammonium chloride	No effect	14 mo.	Improved; no symptoms when taking potassium chloride	Obese
None	.....	10 mo.	Improved; few mild attacks	
Low sodium chloride diet with ammonium chloride	Improved	3 mo.	Improved; symptoms returned when potassium chloride was omitted	
Low sodium chloride diet	Improved	12 mo.	Improved; one or two mild attacks a month	
None	.....	9 mo.	Improved; severe attacks infrequently	
None	.....	8 mo.	Improved; mild attacks following smoking	
Low sodium chloride diet with ammonium chloride	Improved	9 mo.	Improved; return of symptoms with urinary retention	Simple goiter
None	.....	2 mo.	Improved	Several in family have chronic headache
None	.....	6 mo.	Improved; three mild attacks	
None	.....	4 mo.	Improved; no acute attacks	
None	.....	4 mo.	No effect; patient uncooperative; took small amount infrequently	
None	.....	6 mo.	Improved; no acute attacks	
None	.....	Not given	.....	Sweating and palpitation accompany attacks; benign hypertension
Low sodium chloride diet	Improved	Not given	.....	Head injury 18 years ago; no residual symptoms
Low sodium chloride diet with ammonium chloride	No effect	16 mo.	Improved; uncooperative; takes potassium chloride irregularly; several mild attacks	
Low sodium chloride diet with ammonium chloride	No effect	16 mo.	Improved; no acute attacks	
None	.....	4 mo.	Improved; no acute attacks; uncooperative	
Low sodium chloride diet with ammonium chloride	Improved	1 yr.	Improved; ten mild attacks since beginning potassium chloride	
Low sodium chloride diet with ammonium chloride	Improved	9 mo.	Improved; mild attacks infrequently	
Many drugs	No effect	6 mo.	Improved; mild attacks infrequently	Family history of epilepsy

in the p_H of 0.06 and 0.09, and an increase in total carbon dioxide of 8.2 and 8.1 volumes per cent, respectively. A total carbon dioxide greater than 70 volumes per cent was noted in two cases following experimental procedures.

None of these procedures were successful in inducing an acute attack either on the day of the experiment or on the days that followed. Each experiment was carried out within a few days after the patient had sought hospital admission for relief of symptoms. None of the experiments were performed in symptom-free periods. All the patients complained of mild vertigo and tinnitus the morning of the experiment. Two patients volunteered the information that they were benefited by the procedure. The benefit was believed by us to be imaginary and not real. It is concluded from these observations that rapid inducement of alkalosis, hydration or high sodium concentration is not followed by an exacerbation of symptoms of Ménière's syndrome.

The other constituents of the blood, which are given in tables 2 and 3, are essentially normal. The concentration of serum calcium was determined on four patients, serum phosphate on five patients, serum chloride on fifteen patients and nonprotein nitrogen on seven patients. No consistent variation from the normal was observed. The concentration of serum potassium was within the range for normals in twenty-two cases and above normal in four. The concentrations in the above normal group ranged from 6.2 to 15.8 milliequivalents per liter. A concomitant diminution in serum sodium was observed. This indicates that the potassium observations were valid and not technical errors. What is the significance of the observations made on these four patients? Each patient was having severe symptoms when the blood was drawn. Other patients with equally distressing symptoms did not show such changes. This will be discussed further under treatment.

It was apparent from clinical trial by one of us (M. R. B.), as well as from the experience of others, that a diet with a low sodium content had certain merits in the treatment of Ménière's syndrome. From the studies reported in this communication it appeared that the therapeutic effect was not achieved by an alteration of the concentration of sodium and water in the serum. This conclusion prompted us to scrutiny of the low sodium diet. In devising a diet of low sodium content, some increase in potassium content may be unavoidable. Under any condition the proportion of sodium to potassium, which is approximately unity in most normal diets, is altered. If a low sodium diet with normal potassium content were therapeutically effective, it seemed reasonable to try a diet with a normal sodium content but proportionately higher in potassium.[21] To achieve this from 6 to 10 Gm. of potassium chloride in an aqueous solution was given daily. No other dietary modifications were advised. A few of the patients were aware of using less sodium chloride in food with the high potassium intake.

TABLE 2.—*Acid-Base Constituents of Serum*

Patient	Date	Total Fixed Base, M.Eq. per Liter	Sodium, M.Eq. per Liter	Potassium, M.Eq. per Liter	Calcium, M.Eq. per Liter	Chloride, M.Eq. per Liter	Total Carbon Dioxide, Vol. per Cent	Phosphate, Mg. per 100 Cc.	Protein, Gm. per 100 Cc.	Nonprotein Nitrogen, Mg. per 100 Cc.	Comment
E. L.	July 7, 1937	152.0	136.7	6.2	...	104.6	.....	...	...	..	Acute symptoms
R. B.	July 7, 1937	148.0	135.0	6.2	...	105.4	.....	...	...	..	Mild symptoms
A. A.	July 10, 1937	155.8	142.0	...	...	107.8	.....	...	...	..	No acute symptoms
A. A.	Aug. 26, 1937	151.2	143.2	...	...	.....	.....	...	...	..	No acute symptoms
A. A.	Sept. 22, 1938	153.1	.....	4.3	...	.....	.....	...	...	..	No acute symptoms
M. F.	Aug. 26, 1937	147.1	140.0	...	...	.....	.....	...	...	..	No symptoms
H. C.	Oct. 29, 1937	150.5	135.2	15.8	...	97.4	.....	...	7.2	..	Acute symptoms
R. K.	Oct. 29, 1937	150.0	.....	...	...	.....	.....	...	...	..	Mild symptoms
A. S.	Jan. 25, 1938	155.8	151.5	15.1	4.9	90.0	.....	...	6.8	..	Acute symptoms
A. S.	Feb. 8, 1938	150.3	141.4	4.3	4.4	101.7	62.3	3.4	...	..	No symptoms
M. A.	Feb. 11, 1938	154.8	141.2	3.8	...	104.7	.....	...	...	..	Mild symptoms
M. R.	Mar. 18, 1938	153.1	143.0	3.6	...	.....	59.6	...	...	..	Acute symptoms
M. R.	Aug. 5, 1938	.....	.....	3.8	...	.....	.....	...	...	..	Acute symptoms
P. K.	April 27, 1938	150.2	139.0	4.7	...	105.1	.....	...	6.3	..	No acute symptoms
H. C.	May 12, 1938	151.8	140.5	3.6	...	104.3	50.4	2.5	7.1	30	Acute symptoms
J. C.	May 25, 1938	149.9	140.4	3.8	...	.....	.....	...	7.0	..	No acute symptoms
R. H.	June 4, 1938	150.2	139.0	4.1	...	102.5	.....	...	6.0	..	Acute symptoms
R. H.	Sept. 20, 1938	149.7	.....	4.7	...	.....	.....	...	...	..	No symptoms
W. R.	Aug. 9, 1938	.....	.....	4.4	...	.....	.....	...	...	..	No acute symptoms
L. C.	Aug. 18, 1938	.....	.....	4.0	...	.....	.....	...	...	..	Mild symptoms
F. G.	Aug. 20, 1938	.....	.....	4.2	...	.....	.....	...	...	..	Acute symptoms
H. E.	Sept. 13, 1938	151.3	140.0	4.5	...	102.6	52.1	...	7.3	32	No symptoms
G. C.	Sept. 13, 1938	150.3	138.1	4.4	...	102.3	56.9	...	6.7	37	No acute symptoms
G. B.	Sept. 16, 1938	152.1	.....	4.2	...	.....	.....	...	6.5	..	No acute symptoms
K. B.	Sept. 20, 1938	155.2	140.2	4.1	...	.....	.....	...	7.4	..	No acute symptoms
P. S.	Sept. 27, 1938	.....	.....	3.6	...	.....	.....	...	...	..	No acute symptoms
M. H.	Oct. 6, 1938	.....	.....	3.9	...	.....	.....	...	...	..	No acute symptoms
M. C.	Oct. 11, 1938	.....	.....	4.2	...	.....	.....	...	...	..	No acute symptoms
J. T.	Oct. 11, 1938	.....	.....	4.5	...	.....	.....	...	...	..	Acute symptoms
J. O.	Oct. 11, 1938	.....	.....	4.1	...	.....	.....	...	...	..	No acute symptoms

Forty patients have followed this regimen for periods varying from one to sixteen months. Thirty-three of this number have been followed by us. Twelve have been followed by Dr. Charles I. Johnson, of the Massachusetts Eye and Ear Infirmary. The therapeutic results are comparable. All have been benefited, although none have been cured. Seven had attempted previously, and without appreciable benefit, to follow the low sodium regimen with ammonium chloride. All were improved after beginning the high potassium regimen. Several of the patients were uncooperative and did not take adequate amounts of potassium chloride every day. They were improved when they adhered to directions but relaxed subsequently because of the illusion that they had been permanently relieved. A return of symptoms followed in most instances. Several cooperative patients on their own initiative or because of suggestions from us stopped the ingestion of potassium chloride temporarily. In a majority, there was an exacerbation of symptoms within a few days.

21. Talbott, J. H.; Brown, Madelaine R.; Coombs, F. S., and Consolazio, W. V.: Electrolyte Balance of the Blood in Ménière's Disease, Proc. Soc. Exper. Biol. & Med. 38:421 (April) 1938.

Return to the regimen was accompanied by prompt alleviation. One highly intelligent but skeptical patient performed this experiment three times before he was convinced of the merits of the high potassium intake.

Most patients continue to have some tinnitus and vertigo and some have mild attacks occasionally. All except a few are able to lead a relatively normal life. It appears that those having the severest attacks frequently benefit most. Improvement in hearing and tinnitus has been claimed by some patients in this series. We believe that we have observed them too short a time to make any commitments concerning the alleviation of deafness.

None of the patients have had section of the vestibular nerve performed since the beginning of the study. Surgical relief has been considered on only two. Both felt that they were unable to take potassium chloride or a low sodium diet and preferred, therefore, surgical to medical treatment. To date, neither has been operated on because it is believed that the symptoms which persist after operation, though mild, might be as distressing as are those at present.

It must be admitted that the precise action of potassium chloride on patients with this syndrome is not known. Undoubtedly, an important effect results from the diuretic action of potassium salts which hastens the excretion of water and sodium chloride. This dissipation is not unlike that produced by the low sodium diet and ammonium chloride. The pathogenesis of the action of potassium is not believed to be explained by this alone. There is a gradual accumulation of evidence which supports the suggestion that the conduction of the nerve impulse is associated probably with an optimal concentration of potassium in the surrounding mediums. Any alteration of this concentration may upset a delicate mechanism.

As a working hypothesis it is proposed that an increased concentration of serum potassium is indicative of a loss by the tissues, just as a high serum calcium accompanies loss of calcium from the body. With this explanation added potassium restores the depleted tissue potassium and achieves a necessary equilibrium.

The hazards to be considered from the use of liberal amounts of potassium chloride are not significant. In other dyscrasias, one of us (J. H. T.) had recommended similar amounts of the salt daily. These recommendations have been followed by several patients for many months and by a few for two or more years. No untoward effects have been noted.

TABLE 3—*Acid-Base Constituents of the Serum and Alveolar pCO_2 Before and After Administration of Sodium Salts*

Patient, Date, Time	Total Fixed Base, M.Eq. per Liter	Sodium, M.Eq. per Liter	Potassium, M.Eq. per Liter	Calcium, M.Eq. per Liter	Chloride, M.Eq. per Liter	Total Carbon Dioxide, Vol. per Cent	Phosphate, Mg. per 100 Cc.	Protein, Gm. per 100 Cc.	Nonprotein Nitrogen, Mg. per 100 Cc.	pH	Alveolar pCO_2, Mm. Hg	Comment
D. J. 10/26/37 8:00 a.m.	152.5	140.0	4.9	4.5	104.1	56.9	4.7	6.5	34	7.41	41	Mild symptoms
11/ 1/37 8:00 a.m.	152.7	140.7	4.8	4.6	107.2	50.4	4.5	6.5	..	7.40	37	40 m.eq. sodium lactate and 60 m.eq. sodium chloride in 400 cc. water intravenously at 8:05 a. m.; no acute symptoms
11/ 1/37 9:30 a.m.	155.3	144.6	4.1	4.5	107.0	58.6	4.0	6.0	24	7.46	38	No acute symptoms
H. L. 11/ 6/37 8:30 a.m.	151.1	140.0	4.5	4.7	106.2	53.1	3.5	7.0	35	7.41	38	40 m.eq. sodium lactate and 60 m.eq. sodium chloride in 400 cc. water intravenously at 8:35 a. m.; no acute symptoms
11/ 6/37 10:00 a.m.	153.0	141.0	4.0	4.5	106.6	61.2	3.9	6.2	..	7.50	36	No acute symptoms
11/10/37 6:30 a.m.	154.9	144.7	3.5	4.9	100.1	71.5	3.7	6.1	..	7.52	41	270 m.eq. sodium bicarbonate by mouth on November 9; no acute symptoms
G. R. 11/12/37 6:30 a.m.	134.0	142.4	4.4	4.9	102.9	64.8	4.3	6.7	23	7.38	50	Acute symptoms
11/15/37 9:00 a.m.	134.0	142.4	4.4	...	102.4	66.9	...	6.4	..	7.37	44	270 m.eq. sodium bicarbonate by mouth on November 14; no acute symptoms
11/18/37 9:30 a.m.	135.9	143.9	3.6	4.7	.....	73.5	3.2	5.8	..	7.32	41	60 m.eq. sodium lactate and 60 m.eq. sodium chloride in 400 cc. water, intravenously, at 7:55 a. m.; no acute symptoms
1/10/38 11:00 a.m.	132.1	141.5	3.7	4.5	104.5	63.9	3.1	6.3	27	.....	..	Acute symptoms for 24 hours
E. L. 1/10/38 8:00 a.m.	135.1	141.4	4.7	...	104.0	.....	...	6.1	24	.....	..	40 m.eq. sodium lactate and 60 m.eq. sodium chloride in 400 cc. water, intravenously, at 8:05 a. m.; no acute symptoms
1/10/38 9:30 a.m.	136.7	142.0	4.2	...	105.2	.....	...	5.8	..	.....	..	No acute symptoms
1/13/38 6:30 a.m.	137.1	139.4	4.6	..	104.9	.....	...	6.8	..	.....	..	70 m.eq. potassium chloride by mouth daily for 3 days beginning January 10; no acute symptoms

SUMMARY AND CONCLUSIONS

In a study of forty-eight patients with Ménière's syndrome, the concentrations of the acid-base constituents of the serum were determined one or more times on twenty-eight patients. The constituents included total fixed base, sodium, potassium, calcium, chloride, total carbon dioxide, phosphate, protein, and nonprotein nitrogen. Some bloods were drawn during acute symptoms, others were drawn when the patients were relatively symptom free. No constant variation from normal in the concentration of constituents was observed. Four bloods, however, which were taken during an acute attack, showed an increased concentration of serum potassium and a decreased concentration of serum sodium.

An attempt was made in four cases to induce an acute attack. Large amounts of sodium salts were given intravenously and orally in order to produce an increase in concentration of serum sodium. This increase was

accomplished in each case without any exacerbation of symptoms. It was concluded that neither hydration or alkalosis nor an elevated serum sodium is a necessary accompaniment of acute symptoms of Ménière's syndrome.

During the past eighteen months, all the patients whom we have seen suffering from this malady have been treated by a high potassium intake, meanwhile being allowed an otherwise normal diet. The therapeutic effect of this regimen has been very reassuring. It cannot be considered as a cure for all the symptoms, but clinical improvement has been impressive. Since the institution of this regimen, surgical treatment has not been carried out in any of our cases.

MÉNIÈRE'S SYNDROME

MEDICAL VS. SURGICAL TREATMENT

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From the large group of cases in which vertigo is a complaint may be isolated a group of cases in which the course of the disorder is a chronic one and in which intermittent paroxysmal vertigo occurs in association with nausea, vomiting, loss of hearing and tinnitus on the side of the affected ear, occasionally with nystagmus, but without anatomic or pathologic changes which identify the disease.

MEDICAL TREATMENT

Previous to the paper of Furstenberg, Lashmet and Lathrop[2] in 1934, in which favorable results were reported to have been obtained in fourteen cases of typical Ménière's syndrome in which treatment with a diet low in sodium and with ammonium chloride was instituted, cases of this nature had been variously dealt with at the Mayo Clinic.

From the files of the Mayo Clinic the histories of patients considered to present clinical evidence of the typical Ménière's syndrome were selected, comprising patients who had registered at the clinic because of vertigo between Jan. 1, 1929, and July 1, 1938. Only cases presenting the typical triad of symptoms, that is, vertigo, deafness and tinnitus, were included with the exception of seven patients who had deafness but not tinnitus, all of whom had the typical seizures of severe vertigo. All patients with so-called pseudo-Ménière's syndrome, in which the characteristic vertigo occurred unaccompanied by deafness or tinnitus, were excluded, as well as cases presenting evidence of advanced arteriosclerosis, intracranial lesions or cases diagnosed labyrinthitis. All patients had had medical, neurologic and otologic examinations as well as funduscopic studies and, in most cases, roentgenologic examinations of the head.

We are reporting 186 cases. Fifty patients were female and 136 were male. That Ménière's syndrome is primarily a disease of middle life is shown by the distribution of our cases according to age. In the first decade there were no patients; in the second, one; in the third, ten; in the fourth, thirty-two; in the fifth, sixty-two; in the sixth, fifty-eight; in the seventh, twenty-two; and in the eighth, only one.

All of the patients of whom we have records received treatment of some sort for the vertigo, and consequently we are unable to state definitely whether spontaneous recovery occurs in this condition or not. However, it is our opinion that spontaneous disappearance of the vertigo for some unknown reason is not infrequent, since sixteen patients who noted no improvement while on the Furstenberg regimen subsequently experienced reduction in the severity and frequency of the vertigo, whereas in five cases the vertigo disappeared. Whether this represents true recovery is doubtful; it probably is more accurate to classify these improvements as spontaneous remissions.

It is evident to us that complete deafness on the affected side is no guaranty for disappearance of the vertigo, because in our material in eleven cases complete deafness on the affected side was present and seizures of vertigo continued to occur. The type of deafness was determined in 170 cases, in 117 of which nerve deafness was present, in eleven total loss of hearing was present on the affected side, in twenty-six combined deafness was present and in sixteen conduction deafness was present, and, of these, one was diagnosed otosclerosis and five stapes fixation deafness. The deafness was unilateral in 115 cases and bilateral in sixty-seven cases.

The caloric or Bárány test was not reliable in diagnosing Ménière's syndrome. Of the seventy-seven cases in which it was performed, only thirty-nine, or 50.6 per cent, of cases showed abnormal reactions. In six cases there was a complete loss of vestibular function as determined by the Bárány test and the attacks continued, while in four cases complete loss of hearing and vestibular function on the affected side was found. We have not had the opportunity of conducting a follow-up study of the patients who experienced long-term improvement and relating this to vestibular function, in order to determine whether or not such improvement is dependent on loss of vestibular function. As aforementioned, however, it has been our experience that loss of vestibular function on the affected side does not terminate the attacks of vertigo.

There were twenty-three cases in which the Furstenberg treatment had never been tried, although general measures, elimination of foci of infection and the use of sedatives had been instituted. The present status of these patients is indicated in table 1. In considering these cases, as in the cases to be dealt with subsequently, it is impossible to speak of cessation of the vertigo as recovery, since there can be no assurance that recurrence of the vertigo may not take place at some time in the future, although some of these patients have been free from vertigo as long as eight years. Seventy-four per cent of these patients either were free from attacks of vertigo or were suffering from rare to frequent mild seizures. However, in most of these cases the improvement seemed spontaneous and without reference to any form of treatment. It seems evident that spontaneous improvement not infrequently occurs in cases of Ménière's syndrome and may last several years.

The results of treatment of 161 nonsurgical patients as well as of fourteen surgical patients treated by medical management prior to operation are given in table 1.

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Because of lack of space this article has been abbreviated for publication in THE JOURNAL. The complete article appears in the authors' reprints.

Read before the Section on Nervous and Mental Diseases at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

2. Furstenberg, A. C.; Lashmet, F. H., and Lathrop, Frank: Ménière's Symptom Complex: Medical Treatment, Ann. Otol., Rhin. & Laryng. 43:1035-1046 (Dec.) 1934.

It will be noted that 128 of these patients have been treated with a low salt diet and ammonium chloride, as advised by Furstenberg and his co-workers[10] in 1934. In most instances the patient was advised to take ammonium chloride in the dosage of 9 Gm. daily, continuing on the medication for three days and then taking the low salt diet alone for two days, and continuing in this manner. Of the 128 patients so treated, thirty-three, or 26 per cent, reported the vertigo to be improved by the treatment, whereas forty-five patients, or 36 per cent, stated that complete disappearance of the vertigo had occurred. Nine of these patients reported that vertigo immediately returned when salt was added to the diet and that vertigo disappeared on discontinuing its use. Eighteen of these forty-five patients who experienced complete relief failed to state how long complete freedom from vertigo had endured, whereas twenty-seven of these patients reported complete relief from vertigo dating back from six months to four years.

Fifty patients, or 39 per cent, stated that the Furstenberg regimen with ammonium chloride had failed to eliminate or essentially decrease the frequency or severity of the vertigo. Fourteen patients obtained temporary or no relief and were subjected to section of the eighth nerve. Three of the patients who obtained poor results with ammonium chloride stated that they had not been faithful in taking the medication and one patient stated that he persisted in taking sodium bicarbonate. Six patients stated that it was impossible for them to take ammonium chloride because it produced nausea or vomiting, or both. One patient stated that he was forced to discontinue ammonium chloride because of weakness which decreased after discontinuation of the drug, whereas two patients stated that they thought that the drug made their seizures worse and one patient felt that the ammonium chloride intensified his tinnitus, another discontinued the drug because of itching, and a third because of constipation.

It is difficult, of course, to evaluate these unfavorable results, because it is impossible to be sure whether or not the patients have faithfully followed instructions regarding medication and diet. The possibility exists that they have not, however, since this group of cases does not seem to differ essentially from the larger group in which good results with the treatment were reported, with the exception of the fact that, in our material, a larger percentage of patients with unilateral deafness was helped by the treatment than of those with bilateral deafness, as will be mentioned later. The significance of this is not clear, but it may indicate that patients with Ménière's syndrome in its more advanced form respond more poorly to this type of treatment than those in the early stage of the syndrome.

Because of the aforementioned complaints regarding ammonium chloride, it occurred to us to try another salt in its place. Keith and others[13] have demonstrated that potassium nitrate is a neutral and relatively nontoxic salt and that it usually can be taken without resulting in gastrointestinal disturbances.[13a] With its use, sodium tends to be eliminated from the body. Also Talbott and his co-workers[13b] apparently have demonstrated that a high intake of potassium may be more significant in the treatment of Ménière's syndrome than a restriction of sodium. Potassium nitrate has been employed by us in the treatment of Ménière's syndrome since late in 1937. Because patients who registered at the clinic for the first time later than July 1, 1938, are not included in this series, only a comparatively small number of cases can be reported here. We have analyzed the records of thirteen patients who had been given a modified Furstenberg regimen employing potassium nitrate in the dosage of 9 Gm. daily, taken three days and discontinued for two days with the low sodium diet. Four patients reported that they had been free from seizures for more than five months. Three patients reported that the frequency and severity of the seizures had been greatly reduced. Three patients reported that moderate reduction in the frequency and severity of the seizures had occurred.

Six of these patients who reported improvement with potassium nitrate had been treated previously elsewhere with the Furstenberg regimen with ammonium chloride; one with much improvement and four with little or no improvement. In one case ammonium chloride could not be taken because of nausea, although the potassium nitrate was well tolerated. Potassium nitrate failed to improve the vertigo of three patients.

It is somewhat interesting to note the therapeutic results in eleven cases in which treatment with a low salt diet alone was given, without medication being prescribed. It is true that most of these patients did not complain of extremely severe or frequent spells of vertigo. However, at the present time three patients report that they had not had vertigo for more than six months, and two of these were still avoiding salt. Two patients reported a great decrease in the frequency and severity of the vertigo and both of these patients also avoided the use of salt, whereas one patient noted only slight improvement with the low salt diet and had discontinued its use. Five patients noted no improvement from the avoidance of salt but in one case the seizures later became spontaneously less frequent and less severe.

Considering the 152 patients treated with a low salt intake with or without the addition of medication, we find that fifty-two patients, or 34 per cent, are completely free from vertigo whereas forty-three, or 28 per cent, experienced a variable amount of relief from ver-

TABLE 1.—*Effects of Medical Treatment on Vertigo in 175 Cases of Ménière's Syndrome*

Type of Treatment	Disappearance of Vertigo		Improvement of Vertigo		No Improvement of Vertigo	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Low salt diet and ammonium chloride (128 cases)	45	36	33	26	50	39
Low salt diet and potassium nitrate (13 cases)	4	31	6	46	3	23
Low salt diet alone (11 cases)	3	27	4	36	4	36
Other general measures (23 cases)*	14	61	4	17	5	22

* In most instances disappearance of, or improvement in, the vertigo did not immediately follow the treatment.

10. Furstenberg, A. C.: Ménière's Symptom Complex: Medical Treatment, Tr. Pacific Coast Oto-Ophth. Soc. **21**: 150-160, 1936.

13. Keith, N. M., and Binger, M. W.: Diuretic Action of Potassium Salts, J. A. M. A. **105**: 1584-1591 (Nov. 16) 1935. Keith, N. M.; Osterberg, A. E., and Binger, M. W.: The Effect of Certain Potassium Salts on Acid Base Excretion in the Normal Individual, Am. J. Physiol. **119**: 347-348 (June) 1937. Keith, N. M.; Whelan, Mary, and Bannick, E. G.: The Action and Excretion of Nitrates, Arch. Int. Med. **60**: 797-832 (Nov.) 1936.

13a. Potassium nitrate is administered in enteric coated pills each containing 0.5 Gm. of the salt. It is recommended that the medication be taken after meals.

13b. Talbott, J. H.; Brown, Madelaine R.; Coombs, F. S., and Consolazio, W. V.: Electrolyte Balance of the Blood in Ménière's Disease, Proc. Soc. Exper. Biol. & Med. **38**: 421-422 (April) 1938.

tigo. Of these, twenty-three patients noted marked relief and nineteen patients noted moderate relief from vertigo. Fifty-seven patients of this group, or 38 per cent, experienced no improvement in the vertigo with treatment. In regard to the results of medical treatment on tinnitus and deafness, improvement in these symptoms often parallels the improvement in the vertigo, but not infrequently the reverse occurs. Twenty-eight per cent of these patients reported their deafness to be improved and 25 per cent stated that the deafness became worse, while in 47 per cent the deafness was unchanged, and essentially the same results were obtained with tinnitus, although the improvement in tinnitus did not necessarily parallel improvement in hearing.

The statement is frequently made that, with medical treatment, improvement in the vertigo is temporary. The duration of complete freedom from vertigo experienced by thirty-five patients treated by some form of low sodium intake regimen from whom we were able to obtain this information is as follows: Eight patients have been free from vertigo for six months, seven for eight months, seven for one year, one for eighteen months, eight for two years, and four for three to four

TABLE 2.—*Maintenance of Treatment in 152 Cases in Which Ménière's Syndrome Was Treated by Low Salt Diet With or Without Medication*

Results Obtained	Patients Still Undergoing Full Treatment		Patients Receiving Occasional Treatment		Patients Still on Low Salt Diet Alone		Patients Who Discontinued Treatment	
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Good (95 cases)	19	20	13	40	31	33	32	34
Poor (57 cases)	3	5	4	7	2	4	48	84

years. While it is impossible to state that some of these patients may not again have vertigo, it seems to us that these periods of complete freedom from vertigo would seem to bring into question the statement that medical treatment is of no value because of the temporary nature of the improvement produced by it.

In our consideration of the medical problem the questions were asked: Is it necessary to continue medical treatment in order to control the symptoms, and is it possible to continue effective medical treatment following dismissal from the clinic? From the replies of 152 patients regarding the length of time that treatment was continued, the answers to these questions, at least in part, became evident (table 2). As might be expected, many more patients who obtained good results from treatment continue with it than do those who fail to improve. However, it is probably not necessary, in some cases at least, to continue medical treatment in order to control the symptoms. Whether or not spontaneous remission accounts for this continued improvement without treatment cannot be determined. Evidently it is possible for some patients to continue effective medical treatment after dismissal from the clinic.

The last question which remains to be answered is: Is it possible to select patients most suited for medical treatment? It is difficult to lay down any hard and fast rules in this regard. In the following section of this paper one of us (Adson) considers the selection of patients for surgical treatment and to a certain extent the discussions overlap. The patient's occupation, intelligence and social status must be taken into consideration, since it is obvious that, in any individual case, any one of the aforementioned factors may preclude the possibility of successful medical treatment. We believe that, unless one of the aforementioned factors prohibits medical treatment, a trial is well worth while.

Of ninety-four cases in our series of unilateral deafness, the condition in sixty-four, or 68 per cent, was improved with the Furstenberg treatment or a modification of it, whereas of fifty-eight cases of bilateral deafness in which treatment was given in thirty-one, or 53 per cent, the condition was improved. Whether these figures are significant or not we cannot state. The fact remains, however, that in our series of cases a higher percentage of patients with unilateral deafness improved under the Furstenberg treatment or a modification of it than of patients with bilateral deafness.

The problem of the medical treatment of Ménière's syndrome can be summed up best by answering in a brief form the questions asked in the beginning of the paper: 1. Do patients recover from Ménière's syndrome spontaneously? It seems evident that in a condition in which remissions are so frequent the terms "improvement" or "disappearance of vertigo" should be used instead of "recovery." Spontaneous disappearance of the vertigo does occur in Ménière's syndrome, and not infrequently. 2. If improvement takes place spontaneously, does it necessarily follow the loss of hearing and of vestibular function on the side affected? Our study appears to show that this may occur, but not necessarily. 3. Is the syndrome amenable to medical treatment? If so, which medical treatment is the most effective? In our series of cases the vertigo was either improved or made to disappear completely by employing a low salt diet alone or with ammonium chloride or potassium nitrate in 62 per cent of cases. It is impossible to state how many of these patients have experienced spontaneous improvement but the fact remains that improvement occurred directly after treatment. Thirty-eight per cent of patients obtained transitory or no relief from the treatment. Recent observations suggest that a potassium salt may be expected to be of more value than ammonium chloride, and this has been employed in a small number of cases. 4. Is it possible to continue effective medical treatment following dismissal from the clinic? Our results tend to indicate that it is possible but difficult for some individuals.

The selection of patients for medical treatment depends on the occupation, intelligence and social status of the patient. Our results seem to indicate that patients with Ménière's syndrome and unilateral deafness tend to do better with medical treatment than patients with bilateral deafness.

SURGICAL TREATMENT

Anatomic Considerations.—Subtotal section of the acoustic nerve is the operation of choice when substantial hearing remains. McKenzie [14] employed this technic first in August 1931, but unfortunately his patient had little or no hearing at the time of the operation, so that he was unable to determine the efficacy of the operation until July 1932, when it proved very effective in that the vertigo was relieved and the hearing was preserved. The technic was suggested by Dandy [15] in

14. McKenzie, K. G.: Intracranial Division of the Vestibular Portion of the Auditory Nerve for Intractable Vertigo with Two Case Reports, Tr. Acad. Med., Toronto, Nov. 13, 1932.
15. Dandy, W. E.: Ménière's Disease: Its Diagnosis and a Method of Treatment, Arch. Surg. 16: 1127-1152 (June) 1928.

1928 but was not employed by him until March 10, 1933.[16] Cairns and Brain [17] had employed the same technic in February 1933.

Since these early cases were reported, many surgeons have adopted the procedure unless the hearing is so impaired or the tinnitus so severe that the surgeon prefers total resection of the acoustic nerve to that of subtotal section. Dandy [18] suggested that five eighths of the cephalad portion of the acoustic nerve be sectioned, whereas others believe that section of the cephalad half of the nerve is sufficient. McKenzie, with McGregor's assistance, has made anatomic and microscopic studies concerning the relation that exists between the vestibular and cochlear portions of the acoustic nerve, which I wish to quote:

> The vestibular and cochlear fibers arise as the central process of the bipolar cells of their respective ganglia. The two nerves approach the brain stem together from the internal auditory meatus and are known as the auditory nerve. In its passage across the posterior fossa, the auditory nerve lies lateral and in close approximation to the seventh nerve, from which it is separated by the pars intermedia of Wrisberg.
>
> Prof. G. S. Streater's researches on the development of the auditory nerve would lead one to expect a fairly complete separation of the cochlear and vestibular fibers close to the internal auditory meatus. With Dr. McGregor's help an auditory nerve was exposed in its bony canal. The vestibular and cochlear fibers were easily identified as separate bundles close to the cochlea and semicircular canals. The vestibular portion could be traced medially, and at the internal auditory meatus it made up the cephalad and dorsal half of the auditory nerve, with the patient in the prone position. More medially still, the vestibular fibers become ventral, whether by twisting or interspacing or a combination of both I am not sure. For our present purpose it is the relationship close to the internal auditory meatus that concerns us.
>
> On microscopic examination the vestibular nerve shows a very much better defined picture of medullated nerve fibers, the fibers are larger and have a thicker medullary sheath. The difference is sufficiently definite to enable one to examine the cross section of an auditory nerve and immediately pick out the vestibular half, that is, if the section is taken close to the internal auditory meatus. Further studies are required on the mesial portion. Close to the internal auditory meatus, when one attempts to split the nerve at operation, a line of cleavage or groove is occasionally seen, but on microscopic examination there is an absence of a fibrous septum dividing the two nerves. On one occasion Dandy observed a complete separation of the cochlear and vestibular fibers. Numerous attempts have been made in the autopsy room to divide the nerve into cochlear and vestibular portions. Microscopic study of these specimens has always shown an intermingling of the fibers along the line of division; thus it is not possible to accurately split the nerve in a microscopic sense. However, our studies show that division can be sufficiently accurate for the present clinical purpose.

Surgical Considerations.—Since the original description of the symptoms of Ménière's syndrome, many suggestions concerning treatment have been advocated. The most effective medical therapy is that outlined by Furstenberg, Lashmet and Lathrop and the most successful results obtained by surgical therapy are those from total and subtotal section of the acoustic nerve. Although the acoustic nerve had been sectioned for vertigo and tinnitus prior to 1924, it was Dandy's [15] monumental work that emphasized the efficacy of section of the acoustic nerve in the treatment of Ménière's syndrome. Since then it has been universally accepted as a surgical procedure. Subtotal section of the nerve has replaced total section of the nerve when appreciable hearing still remains on the affected side.

Historically, it is interesting to note that Ballance [19] in 1894 suggested that the eighth cranial nerve be divided for vertigo. In 1908 both Frazier [20] and Ballance [20a] sectioned the acoustic nerve intracranially for vertigo. Frazier [21] credited Krause with having divided the eighth nerve for the relief of persistent tinnitus in 1905. Frazier's patient was benefited but not entirely relieved. Ballance's patient was operated on chiefly for tinnitus, but the tinnitus did not disappear until four months after section of the acoustic nerve. His patient had been operated on previously for the removal of the semicircular canals, with relief of nausea. In 1913 Frazier [22] operated on a patient for tinnitus but the operation was only moderately successful. Coleman and Lyerly, in their report of cases, commented that these early operations had not made sufficient impression at the time to bring the operation into general use, and they attributed this failure to an inadequate clinical conception of Ménière's syndrome. Subtotal or partial section of the vestibular portion of the acoustic nerve was first performed by McKenzie and described again by Dandy [18] in 1933. In 1935 Dandy [23] reported his experiences in the treatment of bilateral Ménière's syndrome and advocated section of the vestibular portion of each nerve and stated that it was possible to perform such a procedure when it was possible to make a selective section of the nerve without impairing the hearing on either side.

Although the neurosurgeon has developed a technic for interrupting the vestibular impulses by an intracranial subtotal section of the acoustic nerve, otolaryngologists have accomplished the same effect by destroying the labyrinth. They usually resort to the use of an alcohol injection into the foramen rotundum or exenteration of the semicircular canals. They approach the field through the mastoid and the middle ear, and their procedure not only destroys the vestibular end organ but frequently impairs the cochlea, which produces deafness.

Putnam has employed destruction of the vestibular ganglion through an opening into the superior canal by a transtemporal approach, drilling the petrous portion of the temporal bone anterior to the petrosal sinus. He stated that this approach permits a cleaner and more anatomic dissection than does the approach through the mastoid and gives a more certain exposure of the canals. Finally it entails less danger of producing deafness than either of the other methods, since the middle and internal ear are left intact and the auditory nerve is not even within the field.

The otolaryngologists, by operation on the semicircular canals and by injections of alcohol, have reported successes, as has Putnam with the destruction of the vestibular ganglion. However, in comparing their

16. Dandy, W. E.: Ménière's Disease: Diagnosis and Treatment; Report of Thirty Cases, Am. J. Surg. **20**: 693-698 (June) 1933.
17. Cairns, Hugh, and Brain, W. R.: Aural Vertigo: Treatment by Division of Eighth Nerve, Lancet **1**: 946-952 (May 6) 1933.
18. Dandy, W. E.: Treatment of Ménière's Disease by Section of Only the Vestibular Portion of the Acoustic Nerve, Bull. Johns Hopkins Hosp. **53**: 52-55 (July) 1933.
19. Ballance, C. A., in Allbutt, T. C.: A System of Medicine, ed. 1, London, Macmillan Company, 1899, vol. 7, p. 581.
20. Frazier, C. H.: Intracranial Division of the Auditory Nerve for Persistent Aural Vertigo, Surg., Gynec. & Obst. **15**: 525-529, 1912.
20a. Ballance, C. A.: A Case of Division of the Auditory Nerve for Painful Tinnitus, Lancet **2**: 1070-1073 (Oct. 10) 1908.
21. Frazier, C. H.: Remarks upon the Surgical Aspects of Tumors of the Cerebellum, New York State J. Med. **81**: 272-280 (Feb. 11), 332-337 (Feb. 18) 1908.
22. Frazier, C. H.: Intracranial Division of the Auditory Nerve for Persistent Tinnitus, J. A. M. A. **61**: 327-329 (Aug. 2) 1913.
23. Dandy, W. E.: The Treatment of Bilateral Ménière's Disease and Pseudo-Ménière's Disease, Tr. Am. Neurol. A. **61**: 128-133, 1935.

results with the results obtained by Dandy,[24] Coleman and Lyerly, McKenzie, Olivecrona,[25] Cairns and Brain, Munro [26] and others, it is evident that the intracranial total or subtotal section of the acoustic nerve has proved much more successful. In most instances, with intracranial section of the nerve the paroxysmal attacks of vertigo are eliminated. If not completely eliminated, the severity and the frequency of the attacks have been so ameliorated that the patient has been able to return to work. Total section of the nerve appears to be more effective than subtotal section of the nerve, which may be explained on the basis that occasionally a few vestibular fibers are overlooked unless the symptoms are initiated by a lesion in the nucleus or its central connection. A complete failure to relieve the symptoms by total section of the vestibular nerve may suggest that the lesion was bilateral or was situated on the side opposite to that operated on. Tinnitus may or may not be relieved by partial or total section of the eighth nerve, which again suggests that the lesion is situated centrally to the acoustic nerve. The temporary postoperative nystagmus and vertigo lend further weight to this hypothesis. If a total section of the nerve has been made, patients, although relieved of vertigo, often will complain of a difficulty in locating sound; that is, determining its projection without the aid of visual observation. The loss of hearing is frequently progressive with or without intracranial section of the nerve. However, there are many instances when hearing remains stationary irrespective of treatment. This may be explained by remissions that occur in the course of the disease.

Selection of Cases.—The indications for intracranial section of the acoustic nerve in Ménière's syndrome prior to introduction of the Furstenberg treatment have been based on the severity and frequency of the symptoms and the disability produced. Certain vocations demand accurate balance, which compels the patient to seek surgical relief. Other patients are so situated economically that they cannot afford the loss of time from illness and still others are unable to continue with a medical regimen at home.

The lateralization of the disease is not always easy to determine. The unilateral tinnitus and loss of hearing are pathognomonic signs, but oftentimes deafness and tinnitus are present bilaterally. The tinnitus and deafness are usually more severe on one side and occasionally the caloric tests indicate a unilateral vestibular disturbance. When these tests corroborate the signs of greater tinnitus and loss of hearing, one is assured of the side involved. The nystagmoid movements are not consistent with the side involved and nystagmus may be absent altogether. If the patient remembers on which side the tinnitus and loss of hearing began, the observation is of value in lateralizing the disease.

Surgical Technic.—The surgical technic as employed by all of us is very similar to that originally described by Dandy, Frazier and McKenzie, in that we utilize a unilateral suboccipital approach. One of us (Adson) prefers ether anesthesia, using the drop method over an open mask held over a Magill intratracheal tube, which has been introduced after a preliminary anesthesia of nitrous oxide and ether, prior to placing the patient in the cerebellar upright headrest. The cerebellar upright position is preferred to the horizontal position, since the former affords a better exposure and less hemorrhage and an exposure of the cerebellopontile angle on a horizontal plane in line with the surgeon's vision. It also eliminates much of the suction and sponging as cerebrospinal fluid drains from the surgical field. One of us (Adson) employs the straight lateral incision in preference to the semicircular lateral scalp incision, for it is made more quickly and is closed more easily than other types and gives adequate exposure. A small suboccipital craniotomy is then made mesial to the mastoid, the dura is opened along the inferior border of the decompression and a strip of cotton is placed over the ninth, tenth and eleventh nerves in order to protect them during the operation. After the cerebellar lobe has been covered with strips of cotton, it is elevated with an illuminated retractor, which immediately exposes the eighth nerve that lies superficial to the seventh. With a small right angle hook the eighth nerve is separated from the seventh and is split either in the middle, as McKenzie has suggested, or slightly below the middle, prior to a section of the nerve close to the internal auditory meatus. We have been inclined to section the upper or cephalad five eighths of the nerve as suggested by Dandy in preference to sectioning of the upper half, believing that the greater section offered more assurance against subsequent slight attacks of vertigo. It is possible that the hearing is preserved better when only the upper half is sectioned. The closure is made on anatomic lines without drainage. The wound is covered with a small dressing and the patient is permitted to recline on pillows as soon as he has recovered from anesthesia and is encouraged to get up on the third day after the operation.

Surgical Results.—Our group of surgical cases is much smaller in number than those reported by other neurosurgeons because we have been interested in giving the medical regimen a thorough therapeutic test and because section of the eighth cranial nerve does not give an absolute guaranty of relieving the vertigo and but rarely relieves the tinnitus, although frequently this is reduced. Our series includes twenty patients, thirteen having had total unilateral sections of the eighth nerve and seven having had subtotal sections. There were five patients in our medical series that were operated on elsewhere. The follow-up study gave us an opportunity to evaluate the results, which will be commented on in our summary.

The records reveal that there were sixteen males and four females. The lesion was situated on the left side in twelve, on the right side in seven, and in one the symptoms were bilateral. The average duration of symptoms prior to operation was 4.3 years. The frequency of the attacks varied from several times during a day to one attack in every two or three days, to a series of attacks every two months. The usual paroxysmal attacks of vertigo lasted from two to three minutes, but in two cases it lasted several hours. In describing their attacks of vertigo only two of the patients described the phenomenon as a whirling sensation in clockwise fashion and two described it as in counterclockwise fashion. Those who complained of clockwise vertigo had lesions on the right side and the

24. Dandy, W. E.: Pathologic Changes in Ménière's Disease, J. A. M. A. **108**: 931-937 (March 20) 1937; Ménière's Disease: Symptoms, Objective Findings and Treatment in Forty-Two Cases, Arch. Otolaryng. **20**: 1-30 (July) 1934; footnotes 3, 15, 16, 18 and 23.

25. Olivecrona, Herbert: Ueber Ménière's Krankheit und ihre chirurgische Behandlung, Schweiz. med. Wchnschr. **68**: 125-128 (Feb. 5) 1938.

26. Munro, Donald: The Surgical Treatment of Certain Repeated Explosive Attacks of Vertigo Occurring in the Absence of Any Demonstrable Etiology—Ménière's Disease: A Report of Fourteen Cases of This and Other Types of Aural Vertigo and Including One Case Involving Both Vestibular Nerves, New England J. Med. **216**: 539-551 (April 1) 1937.

two who complained of counterclockwise vertigo had lesions on the left side. Nystagmus was present, although slight, in five cases. Patients frequently complained, during the interval between attacks, of apprehension and fear of a seizure of vertigo, although as a rule they were relatively free of all symptoms other than the tinnitus and impaired hearing. Three frequently had headaches and one complained of a variable amount of dizziness, which was completely relieved by total section of the eighth nerve.

Nine of the twenty patients had been placed on the medical regimen of a salt free diet and ammonium chloride prior to the operation when the eighth nerve was either totally or subtotally sectioned. Of the nine, five failed to get relief from medical treatment and four obtained only partial or temporary relief. The treatment extended over a period of from three to fourteen months. Five of the nine patients were relieved completely by section of the eighth nerve, four had 75 per cent of their symptoms relieved, and an occasional mild attack had recurred following the operation.

In analyzing the results of the surgical procedures we found that, of the thirteen patients who had complete unilateral section of the eighth nerve, nine had obtained complete relief of their vertigo, three had obtained great relief of vertigo, and one had obtained no relief. The tinnitus disappeared in two cases, was greatly relieved in two and slightly relieved, if at all, in seven, with no relief in two. Of the seven patients who had a subtotal section of the eighth nerve, four were completely relieved of vertigo, three greatly relieved of vertigo and the hearing was maintained in these three cases. The loss of hearing in four of these cases was either complete after the operation or it continued to fail. The tinnitus disappeared in two and was moderately relieved in one and was slightly relieved, if at all, in four.

At the time of operation two patients had unusually large internal auditory arteries, and two patients had accessory arterial loops wrapped about the eighth and seventh nerves. The arterial loops were continuations of the anterior inferior cerebellar arteries. In one instance the vestibular and cochlear portions of the nerve were separated as a Y at the entrance of the internal auditory meatus.

The postoperative study of the five patients operated on elsewhere revealed that one patient had been completely relieved of vertigo and tinnitus after section of the nerve. This patient stated that he was unable to take ammonium chloride because it nauseated him and prevented him from eating. The second patient stated that there was some improvement in the vertigo and that the attacks were less severe but that the tinnitus continued. The third patient said that she received no relief from her vertigo or tinnitus and was told postoperatively that her failure to obtain relief was due to nervousness. The fourth patient was relieved for three months and then continued to have an occasional attack which subsequently was controlled by a salt-free diet. The fifth patient had an anomalous vascular lesion of the inferior anterior cerebellar artery. This patient stated that his violent attacks of vertigo had disappeared but that he had continued to remain dizzy and had been unable to work.

In evaluating the results of nerve section in the treatment of the symptoms of Ménière's syndrome, we were anxious to learn the patient's reaction to the operation and to determine how many were able to return to their former vocation. Six patients of the twenty were completely free from all symptoms, eleven stated that they were relieved of more than 75 per cent of their symptoms, two were only partially relieved, and one obtained no relief at all. Fifteen stated that they were able to resume their regular work, five complained that they were unable to resume their regular work; three of these were women of a highly nervous temperament. One patient was a man who was much concerned about industrial compensation, and the fifth was an extremely apprehensive individual.

In reviewing the literature as well as our own cases, it is apparent that a subtotal section of the nerve is preferable to a total section; however, there are instances when one is justified in carrying out a total section. The indication for such a procedure would be when the hearing is practically lost and when there is a desire to relieve the tinnitus to a maximal extent. Crowe [27] stated that examination of seventy-two patients postoperatively who had had subtotal sections of the eighth nerve by Dandy, with an average lapse of 2.2 years, revealed that the deafness in the affected ear was worse in 30.5 per cent of cases, was unchanged in 50 per cent and was improved in 19.5 per cent. It would appear from a review of our own cases that total section of the eighth nerve is more effective than subtotal section in relieving the tinnitus, but, unfortunately, no definite assurance can be given to the patient. As a general rule the patient can be assured that tinnitus will be partially or totally relieved. Reduction of the tinnitus makes it possible for the patient to hear more distinctly in a number of cases.

The review of our patients under a medical regimen suggests that remissions occur without any specific treatment and that the remissions have continued to the extent that a cure is suspected. The review further suggests that reduction of the sodium content in the body, by means of the low salt-free diet, is effective in relieving symptoms. The administration of ammonium chloride or potassium nitrate in conjunction with the salt-free diet offers additional relief. It is apparent that all medical regimens may fail and that section of the vestibular portion of the eighth cranial nerve will relieve the vertigo when the medical treatment fails. However, there are instances in which total or subtotal section of the nerve also fails to give relief. This might be explained on the basis of improper diagnosis or selection of a patient whose numerous functional complaints shadow the real symptoms of Ménière's syndrome.

SUMMARY

It is our impression that section of the vestibular portion of the acoustic nerve is the most effective measure for the relief of symptoms of Ménière's syndrome.

The medical measures have proved of value and the patient should be given a choice of treatment if he is so situated economically as to afford hospitalization, more or less continuous medical care, and the loss of time if additional attacks of vertigo appear.

The patient should be urged to have the operation if the medical regimen proves ineffective.

The patient should be advised to choose the operation in preference to the medical regimen if his vocation precludes attacks of vertigo or if his economic status does not permit of loss of time from labor or the comfort of hospital care or prolonged medical treatment.

27. Crowe, S. J.: Ménière's Disease: A Study Based on Examinations Made Before and After an Intracranial Division of the Vestibular Nerve, Medicine **17**:1-35 (Feb.) 1938.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. TALBOTT AND BROWN AND DRS. WALSH AND ADSON

DR. F. D. LATHROP, Ann Arbor, Mich.: I believe that these observations are decided advances in the formulation of a rational method of therapy in the treatment of Ménière's syndrome. Naturally the mode of therapy instituted in the treatment of any particular disease entity should be that form which deals most effectively with the etiology. The etiology of Ménière's symptom complex is unknown, although there is evidence which suggests that it is related to disturbances of mineral metabolism. I entertain the idea that a pathologic lesion exists within the involved labyrinth which allows the accumulation or retention of sodium ions, thus producing chemical or pressure alterations within the internal ear resulting in the attacks of vertigo. I agree with Drs. Talbott and Brown that the gross retention of water or sodium by these patients is not of significance and also that the blood sodium determination may be within normal limits. However, one must not overlook the fact that the blood sodium level of patients with severe Addison's disease may be within normal limits. Yet the cortex of the adrenal glands is said to control the metabolism of sodium in the body. With this point in mind it should be obvious that the slight retention of sodium which may occur in the labyrinth of patients suffering from Ménière's syndrome would not in all probability be reflected in the blood sodium determination. I have studied potassium metabolism in nephritis and Ménière's syndrome and have not found potassium to be a reliable diuretic. Diuresis may occur when potassium is administered but to a much less extent than that obtained with a neutral diet and ammonium chloride. Furthermore, when a patient follows such a regimen he excretes not only water and sodium but also potassium. This is somewhat incongruous to the observation of Drs. Talbott and Brown that the administration of potassium benefits patients suffering from Ménière's syndrome. I agree with Drs. Walsh and Adson that spontaneous remissions do occur in patients suffering from Ménière's symptom complex. I have seen cases in which the attacks of vertigo have disappeared entirely without the institution of any type of therapy whatever. I also agree with the statement that patients afflicted with Ménière's syndrome are entitled to a thorough trial on the medical regimen before contemplating section of the eighth cranial nerve when circumstances allow this program.

DR. JOHN H. TALBOTT, Boston: I believe that the most important conclusion that has come from this discussion on Ménière's syndrome is the agreement between medical and surgical neurologists that prolonged medical treatment should precede surgical intervention. Since the study was started at the Massachusetts General Hospital more than two years ago we have not operated on a single patient with this disease. In a much larger series than ours, Drs. Walsh and Adson have operated on less than 10 per cent of their group. It appears further from the discussion by Drs. Walsh and Adson that several of those treated surgically were not benefited appreciably. We have been interested in the use of potassium chloride because it may be employed with an otherwise normal diet. The advantages of a normal diet over a low sodium diet with ammonium chloride are obvious. Many of our clinic patients at the Massachusetts General Hospital are of foreign extraction and have limited resources. It is practical for them to add a small amount of potassium chloride to their regular diet and impossible frequently to expect them to follow a low sodium regimen. An inexpensive method of administering potassium is a 25 per cent aqueous solution of potassium chloride. One teaspoonful of such a preparation contains about 1 Gm. of salt. One teaspoonful of the aqueous solution is given with water or other fluid from six to eight times a day. The majority of patients tolerate potassium chloride without any gastrointestinal or other disturbances. I recall only one patient who objected strenuously to prolonged ingestion of this medicine. This patient was suffering from cardiac decompensation as well as Ménière's syndrome and was unable to take adequate amounts without complaining of indigestion. We have not made any claims for potassium chloride in the treatment of acute idiopathic vertigo but several patients who have been studied experimentally have been relieved of distressing symptoms.

DR. M. N. WALSH, Rochester, Minn.: I have been asked about the dosage of potassium nitrate which we used. We have requested the patients to take 9 Gm. of potassium nitrate enteric coated tablets daily, taking the medicine for three days and discontinuing it for two days.

DR. A. W. ADSON, Rochester, Minn.: The economic condition of the patient has a great deal to do with the selection of treatment. We have leaned toward the medical treatment. However, there are patients who are unable to obtain medical treatment or prolong its use. For instance, I recall an engineer who emphatically stated "The medical treatment is all right but I am unable to take it." So that there are occasions when the economic status of the individual compels one to select the surgical treatment instead of giving medical management a trial. I believe that subtotal section of the eighth nerve is the one most useful procedure and I do not believe that the medical treatment should be prolonged indefinitely unless the potassium chloride will do more than we have been able to accomplish in our own medical series. It should be remembered that surgical treatment relieves a number of patients who failed to obtain relief by medical management.

Clinical Notes, Suggestions and New Instruments

SUBACUTE YELLOW ATROPHY OF THE LIVER DUE TO "SOLVENT"

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Not so long ago the field of industrial medicine was limited to a few salaried physicians or to a small group of physicians in private practice who were more or less favored by the industrial concerns or the insurance carriers. However, since legislation has made it possible for the injured employee to have free choice of physician, the field of industrial medicine and surgery has been opened to the profession at large. As a result of this change, most physicians come in contact with industrial accidents and occupational diseases more frequently than heretofore. Many of the older occupational diseases are common and well known to all of us, but there are a few cases which we see only occasionally and some cases which we see rarely; with regard to these it becomes our duty as professional colleagues to acquaint one another with what we think is valuable.

My particular interest in this paper concerns the hazards of the cleaning and dyeing industry, especially with the types of solvents that are used in this business. Some of the common solvents used are chloroform, carbon tetrachloride, naphtha, benzine, alcohol, ether, acetone, gasoline and related products. The role of the chlorinated hydrocarbons is well established as an etiologic factor in diseases of the liver, which range from mild acute hepatitis to acute yellow atrophy with death. It is also well established that petroleum and its derivatives, gasoline, benzine, naphtha and other distillates, have a toxic effect on the central and peripheral nervous system, inducing symptoms ranging from mild neuritis to coma with death.

The medical literature of this country and abroad mentions only two definite cases of liver damage in which the cause was exposure to a petroleum product. In 1919 Haden,[1] at Johns Hopkins Hospital, reported a case of chronic benzine poisoning with jaundice, enlargement of the liver, anemia, traces of albumin in the urine and bile in the stools. In 1934 Nunn and Martin[2] reported a series of seventy-two cases of gasoline and kerosene poisoning by ingestion or aspiration, with one case showing fatty degeneration of the liver at autopsy. Physicians in this country recognize the effects of petroleum products on the central and peripheral nervous system but have been too conservative in realizing that these same products can produce pathologic changes in other parts of the body such as the

1. Haden, R. L.: Benzine Poisoning with Report of a Chronic Case, Bull. Johns Hopkins Hosp. **30**: 309-310 (Oct.) 1919.
2. Nunn, J. A., and Martin, F. M.: Gasoline and Kerosene Poisoning in Children, J. A. M. A. **103**: 472-474 (Aug. 18) 1934.

gastrointestinal tract and the hemopoietic, cardiovascular and respiratory systems. In 1933 Vigdortschik [3] reported his observations of the effects of chronic benzine poisoning on 451 rubber workers, 412 weavers and 384 cigaret makers. Gastrointestinal symptoms were observed in from 34.3 to 37.5 per cent, the hemoglobin content of the blood varied between 64.8 and 66.1 per cent, the average erythrocyte count was 3,600,000, and the average leukocyte count was 6,700. Skin disorders were observed in from 2.7 to 4.9 per cent. In this series from 42 to 70 per cent showed nervous symptoms, from 33.5 to 39.8 per cent showed cardiac symptoms and from 40 to 48.8 per cent showed pulmonary symptoms. In 1934 Frumina and Fainstein [4] studied the effects of benzine exposure in the rubber industry, where the men were subjected to blasts of benzine vapor from driers in a raincoat factory. They reported that 93 per cent showed nervous symptoms, the average hemoglobin content of the blood was 75 per cent and the total count of erythrocytes was decreased to 43.1 per cent. In 1932 Feil [5] studied the effects of benzine poisoning and found, in addition to nervous symptoms, anorexia, gastralgia, nausea, vomiting and hematemesis. The blood showed reduction in the number of erythrocytes and increased coagulation time. There were also gingival and uterine hemorrhages. Hamilton [6] cited Korschenewsky, who found chronic bronchitis and anemia very common not only among workmen but also among officials in the oil fields at Baku; she also cited Petkevitch, who discovered chronic anemia and nervous disease among these men. According to Hamilton,[6] Lewin, one of the foremost German toxicologists, came to the United States to observe workmen in the oil wells of Pennsylvania and the refineries on the Jersey coast. In 1888 he published an account of his investigations. This article stimulated the American physicians, and shortly thereafter Mitchell [7] and Sharp [8] published reports on the general and local effects of petroleum. Hamilton [6] cited Kolsch, who reported that long-continued exposure to benzine causes anemia as well as nervous symptoms. He also held that hemoptysis and albuminuria can occur and can persist for some time. Hamilton also stated that she received reports from Smithies [9] in which he mentioned anemia and increased fragility of the erythrocytes. Smithies reported a case of a young woman, a chemist who conducted research in petroleum distillates for several months, after which she developed anemia with 45 per cent hemoglobin and an erythrocyte count of 3,600,000. Askey [10] reported a case of aplastic anemia due to benzine poisoning. Schustrow and Salistowskaja [11] in 1926 reported the results of experiments on rabbits and guinea pigs that were subjected to inhalation of purified petroleum benzine. They found emaciation, aplastic hemolytic anemia, increased fragility of the erythrocytes and leukopenia. They explained the toxic effects by the action of the substance on the lipoids of the blood and expressed the belief that the damage is greater by inhalation than by ingestion. All of the foregoing reports substantiate the fact that the distillates of petroleum, especially the volatile group, have definite deleterious effects on the various systems of the body. These effects include, for the nervous system, drowsiness, lethargy, apathy, neurasthenia, intoxication, neuroses, amnesia, psychoses, paralyses, parasthesias, anesthesias, convulsions, tremors, depressive or manic states, coma and death; for the muscular system, weakness, myasthenia and atrophy; for the respiratory system, general irritation, cough, bronchitis, hemoptysis and pulmonary edema; for the cardiovascular system, depression, failure, edema and collapse; for the gastrointestinal system, anorexia, gastralgia, nausea, vomiting, hematemesis, hepatitis, pancreatitis, diarrhea and bloody stools; for the hemopoietic system, cholemia, anemia, uremia and hyperglycemia; for the genito-urinary system, nephritis, albuminuria, glycosuria and metrorrhagia.

The substance with which I am concerned in this report is known as "solvent" or "Stoddard's solvent" in commercial parlance. The term "solvent" is not descriptive of the substance and does not convey any idea of its nature. In the fractional distillation of petroleum, volatile gases such as hydrogen, methane and ethane are removed first. Then purified petroleum benzin is boiled off between 40 and 70 C.; from 70 to 90 C. gasoline is distilled; from 90 to 120 C. naptha is distilled; between 120 to 150 C. benzine is distilled; from 150 to 170 C. "solvent" is distilled; from 170 to 300 C. kerosene is distilled, and beyond that point the heavy lubricants and paraffin are removed. So it is seen that "solvent" is closely related to benzine, there being a difference of only 20 degrees C. in the boiling point. Hence it is apparent that it would be possible for this "solvent" to produce effects similar to those of benzine. Chemical analysis of the "solvent" was performed for me by the Bender Laboratories in Albany, N. Y. The chemist's report showed that this "solvent" volatilizes between 152 and 178 C. Qualitative tests for aldehydes, ketones, alcohol, organic acids and esters are negative. It contains no chlorine. There is no residue on evaporation, and the liquid burns with a smoky flame. It is identical with decolorized and deodorized gasoline of low volatility. Because of its lower flash point, it is much safer than gasoline from the standpoint of fire prevention. In other words, it is a distillate of petroleum to which nothing has been added or removed and which because of its relative safety is used in large quantities. For ordinary household uses it is sold in gallon lots, and the housewife does her own cleaning with impunity, as she uses it in small quantities and then only occasionally. But in the cleaning establishment it is used in large quantities continuously, and it is this exposure which may affect the person who handles it.

REPORT OF CASE

On March 25, 1938, a man presented himself at my office because of yellow skin and vomiting spells. On January 1 he went to work at the cleaning and dyeing factory, where his duties were to put clothing into the churners and remove them by hand. He controlled three large churners, each consisting of a horizontal cylinder about 10 feet long and 4 feet in diameter. He circulated from one cylinder to the other, his hands being immersed or wet with the "solvent" during most of his working time. The room in which he worked was usually about 8 degrees warmer than any of the other rooms in the plant. With the exception of a large electric fan, there was no special apparatus for ventilation and purification of the air. Hence the patient was exposed to the fumes daily. Within two weeks he developed a follicular dermatitis of the hands and forearms, with redness and roughness of the skin and dehydration with desquamation around the hair follicles. This persisted from the time of its appearance until he came to see me. Within three or four weeks he noticed that when he came to work and inhaled the fumes he would feel nauseated and have gastric discomfort. During the week before he saw me yellow color of the skin and eyes developed, and he had four or five vomiting spells. He had lost about 6 pounds (3 Kg.) in weight during the preceding two months and was beginning to lose his strength. He smoked very little, drank hardly any alcoholic beverages, had no history of venereal disease and had been in good health up to the present time. The family history was negative for tuberculosis, syphilis, heart disease, kidney disease, diabetes and cancer.

The patient was well developed and well nourished, 26 years old and 5 feet and 8 inches (173 cm.) tall, weighing about 135 pounds (61 Kg.). He was ambulatory; there was scleral and cutaneous jaundice. Despite the jaundice, one could detect the early pallor of anemia. He was anxious but not uncomfortable. Routine physical examination revealed no pathologic change of the ears, nose or throat. The scleras were jaundiced but otherwise ocular examination was negative. There were no palpable glands in the neck. The heart and lungs showed no abnormality. On inspection, the abdomen was normal except for the cutaneous jaundice. Palpation revealed the edge of the liver

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4. Frumina, L. M., and Fainstein, S. S.: Zur Benzintoxikologie, Zentralbl. f. Gewerbehyg. **21**: 161-165 (Sept.-Dec.) 1934.

5. Feil, André: Les intoxications professionnelles par la benzine et le benzol, Presse méd. **40**: 1973 (Dec. 28) 1932.

6. Hamilton, Alice: Industrial Toxicology, New York, Harper & Brothers, 1934, pp. 180-228.

7. Mitchell, J. K.: General and Local Effects of Paraffin Oil, M. News **53**: 152-154 (Aug. 11) 1888.

8. Sharp, W. H.: The Poisonous Effects of Petroleum, M. News **53**: 150-152 (Aug. 11) 1888.

9. Smithies, Frank: Gastroduodenal Hemorrhage, Ann. Int. Med. **1**: 637 (March) 1928.

10. Askey, J. M.: Aplastic Anemia Due to Benzol Poisoning, California & West. Med. **29**: 262 (Oct.) 1928.

11. Schustrow, N., and Salistowskaja, E.: Benzine Poisoning, Deutsches Arch. f. klin. Med. **150**: 27 (Feb.) 1926; abstr. J. A. M. A. **86**: 1254 (April 17) 1926.

about 2 cm. below the costal margin on the right side. No enlargement could be detected to the left. The spleen could not be felt. There were no other enlargements or masses in the abdomen and groins and no tenderness or muscle rigidity. The extremities and the reflexes were normal. Physical examination of the central nervous system yielded no positive information.

On March 27 the patient was admitted to the Ellis Hospital for detailed observation. Three days after admission to the hospital the x-ray and laboratory reports were as follows: Flat x-ray plate of the abdomen negative; blood Wassermann reaction negative; bile present in the stools; dextrose tolerance test, one hour 200 mg., one and a half hours 230 mg., two hours 250 mg., four hours 143 mg. This shows decreased sugar tolerance. The icteric index was 32. In the fragility test, hemolysis began in a 0.4 per cent solution and was not complete at 0.28 per cent, showing a decidedly increased resistance of the erythrocytes. The urine showed a trace of albumin, a trace of sugar and urobilin. Subsequent blood tests revealed the following icteric indexes: two days after admission, 94 in the morning and 106 in the afternoon; four days later 27.5, seven days later 13, twelve days later 18, eighteen days later 21, twenty days later 7.8, twenty-nine days later 6.6, thirty-nine days later 7 and two months later 6. All times are calculated from the date of the first test; the values of bile retention show a high level of 106 on the fourth day after admission to the hospital, with a gradual return to normal within three weeks. On Feb. 7, 1939, almost one year after the onset of the illness, the icteric index was 10; on February 29, 10, and on April 5, 7. This test was done according to the Bernhard and Maue modification of Meulengracht's method, in which it has been found that the normal limits are between 2.5 and 5, with an average of 3.6. According to this determination the patient still showed some latent jaundice with possible permanent liver damage. The blood picture on two examinations in the first week showed a total red count of 4,000,000; total white of 7,000, 80 per cent hemoglobin and some anisocytosis. Ten days later the total red count was 4,200,000 with 72 per cent hemoglobin. The blood cholesterol level was 166 mg., blood sugar 111 mg. and urea nitrogen 114 mg. A scratch test with the "solvent" on the forearm produced a large wheal, and the control was negative. On April 23 the patient's condition was sufficiently improved for him to be discharged from the hospital. On May 10 x-ray visualization of the gallbladder was negative. The x-ray department was reluctant to give intravenous dye for gallbladder function tests in the presence of jaundice; consequently the tests were delayed until the patient improved.

The various positive results indicated obstructive jaundice, originating in the parenchyma of the liver. A hemolytic factor may have contributed to the anemia and jaundice.

The albumin in the urine may have been due to toxic nephritis, to the presence of bile in the urine or to both. The sugar in the urine was attributed to the decreased sugar tolerance in general and possibly also to toxic pancreatitis. The occult blood in the stools was interpreted as a result of petechial hemorrhages into the mucosa of the gastrointestinal tract. The anemia was produced by the direct action of the "solvent" on the blood and the hemopoietic system. The swelling of the liver which was present is usually found in the early stages of toxic hepatitis, or yellow atrophy of the liver. The negative x-ray observations were significant because they eliminated the extrahepatic biliary system as a source of pathologic alteration. Although there were abnormal changes in the blood, these were not potent enough to produce the marked degree of bile retention in the body, hence it could only be interpreted as caused by intrinsic liver changes. Throughout the course of the disease, the temperature, pulse and respiration remained normal. The patient had no pain in the abdomen during the entire period of illness. During his confinement to the hospital, the jaundice disappeared almost completely, and appetite and digestion were improved. He gained 6 pounds (2.7 Kg.); the pallor, weakness and tiredness disappeared. The dermatitis disappeared within three weeks and has not recurred at the time of this report. To all intents and purposes the patient was improved.

TREATMENT

The treatment was for the most part symptomatic. The patient was given a low fat diet, with fluids freely supplied. Calcium was administered intravenously in the form of a 10 per cent solution of calcium gluconate, 10 cc. being given twice daily. Insulin was administered to keep the urine sugar free. I feel that the most important single factor contributing to the patient's recovery was his removal from his occupation.

COMMENT

A young man presents painless jaundice, muscular weakness, loss of weight, dermatitis on the hands, anemia, gastrointestinal disorders, albuminuria and glycosuria. The only positive factor in the history is three months' exposure to "solvent" in a dry cleaning factory. The physical examination, laboratory data, course of the disease, and subsequent improvement following the patient's removal from his employment, with no recurrence up to the present time, indicate general toxemia affecting principally the liver and, in addition, the blood, kidneys, pancreas, gastrointestinal tract and muscular system. I was impressed by the fact that I was confronted with a case of subacute yellow atrophy of the liver with an unusual origin. It has been considered safe to use "solvent" in large quantities, and the employees handle it with impunity. Knowing that any volatile solvent can affect the body, I realize that this "solvent," apparently innocuous, can produce serious disorders, and I recognize this new hazard.

SUMMARY

A case of subacute yellow atrophy of the liver, with recovery, was due to a petroleum distillate known as "solvent." According to the medical literature it is rare for petroleum products to cause liver disorders. They usually have an affinity for the central and peripheral nervous systems and occasionally for the blood. I believe that the medical profession and the industry should be aware of such possibilities so that this hazard may be recognized and treated.

2014 Eastern Parkway.

ALLERGIC DEATH DUE TO INTRAVENOUS USE OF DIODRAST

SUGGESTIONS FOR POSSIBLE PREVENTION

LEO P. DOLAN, M.D., TOLEDO, OHIO

Numerous toxic effects of varying severity following the use of contrast solutions in urography have been reported. Crane,[1] in reporting sudden death after the intravenous injection of 30 cc. of diodrast solution stated that in five cases found in the literature death was allegedly due to the use of intravenous contrast mediums in urography. One or possibly two of these may not, he thought, have been directly due to the solution. In discussing Crane's paper one physician was inclined to be skeptical of the cause of the reaction. He referred to the large number of injections used at his institution for intravenous excretory urography without occurrence of any severe reactions. Another discusser pointed out that in the recent work of Robb and Steinberg [2] in visualizing the chambers of the heart, a 70 per cent diodrast solution was rapidly administered intravenously to produce arterial and cardiac roentgenograms and no fatal reactions were recorded.

It is common knowledge that reactions, even deaths, have been commonly reported as following the routine intravenous use of ordinary drugs. Few physicians have escaped a reaction of some kind from intravenous medication.

A woman aged 65 had suffered from renal colic on the left side for several hours. One half grain (0.03 Gm.) of morphine and 1/150 grain (0.4 mg.) of atropine did not relieve her of pain. A roentgenogram of the urinary tract revealed a small shadow, less than 0.5 cm. in size, in the area of the lower part of the left ureter. A ureteral catheter, size 6 F., was passed beyond this point. After the withdrawal of 35 cc. of urine through the catheter, the pain was relieved. The catheter was fixed in place; however, it was accidentally withdrawn during the night with some recurrence of the pain but not sufficient to require an analgesic.

Read before the annual meeting of the North Central Section of the American Urological Association, Indianapolis, Sept. 25-26, 1939.

1. Crane, J. J.: Paper read before the annual meeting of the American Urological Association in May 1939; J. Urol., to be published.

2. Robb, G. P., and Steinberg, Israel: Am. J. Roentgenol. 41:1 (Jan.) 1939.

The following morning another film revealed the shadow to be somewhat lower in the pelvic portion of the ureter and it was decided to obtain an intravenous excretory urogram in order to establish the degree of function and drainage of the left kidney. If function and free drainage were present, further instrumentation was to be temporarily withheld in the hope that the calculus would pass into the bladder unassisted.

It has been my practice to inject only 3 cc. of diodrast solution slowly and then wait a full minute for any sign of reaction. If none appears, the remaining solution is injected slowly over a period of five minutes. On several occasions injection has not been completed because of evidence of slight respiratory embarrassment.

In this case, at the time of the pause, after the injection of only 3 cc. of diodrast solution, the patient's face first became dark red and respiratory embarrassment developed as if she were choking. The face rapidly turned black. Artificial respiration was immediately instituted, an airway was passed into the trachea, and within two minutes oxygen was being administered by an anesthetist. With a stethoscope heart tones could be heard, but only faintly. Epinephrine and caffeine with sodium benzoate were administered intravenously, and finally epinephrine was injected directly into the heart. All this was of no avail; the patient died.

Later the information was obtained that for twenty years the patient had suffered from rather severe intermittent attacks of bronchial asthma which simulated to a lesser degree this fatal attack. Permission for autopsy was not obtained, but the conclusion was that this allergic patient apparently had an allergic or anaphylactic death due to the intravenous administration of only 3 cc. of diodrast solution. This fact was reported at once to the manufacturers of the medium with the exhortation that they include in their literature the statement that asthma or iodine sensitivity is a contraindication to the intravenous use of diodrast or skiodan. This took place more than a year ago, but until this paper was read I had seen no literature which warned against asthma or drug allergy as a contraindication to the use of these products.

Cutaneous tests are known to be of no practical value in determining sensitivity to drugs, and this holds true for urographic mediums. In order, therefore, to guard against the repetition of such a tragic occurrence as herein reported, I now make a thorough search of the patient's allergic history for any apparent signs of sensitivity or allergic manifestations. If a history of allergic sensitivity of any kind is obtained, I attempt to determine sensitivity to the medium employed by having the patient hold 1 or 2 cc. of it in the mouth for ten minutes. If no sign of reaction occurs at the end of this period, the patient is then instructed to swallow the solution held in the mouth. After thirty minutes a check is made for possible reactions. If none have appeared in this time, I proceed in a routine way with the intravenous administration.

In one known case of iodine sensitivity, a severe reaction occurred with this procedure within three minutes after the patient had taken the solution into the mouth. I immediately had the patient expectorate the solution and then rinse out the oral cavity with water. The reaction that occurred was characterized by a sensation of numbness which started around the lips and rapidly extended over the entire face. The tongue gave the sensation of filling the mouth and affected the respiration. Epinephrine was used in ordinary solution and in a few minutes was given in oil solution. An hour later comparative comfort ensued. The numbness of the lips, however, lasted more than five hours. These were the same symptoms this patient had experienced a year previously, after having taken 2 grains (0.13 Gm.) of potassium iodide for bronchitis. At that time, however, the symptoms remained for a much longer period and were associated with dermatitis medicamentosa.

SUMMARY AND CONCLUSION

A fatality in a woman of 65 followed the intravenous administration of 3 cc. of diodrast for contrast urography. This substance is potentially dangerous, especially in cases of asthma or iodine sensitivity. A method for guarding against it is in use.

1052 Edison Building.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. HOWARD A. CARTER, Secretary.

MAICO AUDIOMETER, MODEL D-5, ACCEPTABLE

Manufacturer: The Maico Company, Inc., 83 South Ninth Street, Minneapolis.

The Maico Audiometer, Model D-5, is designed for the measurement of the acuity and range of hearing. The unit weighs 24½ pounds and is 17 by 10 by 8 inches in size.

Eleven fixed frequencies from 64 to 11,584 cycles per second are provided, as shown in the accompanying table, which also gives the intensity range of each test tone above the normal threshold.

Maico Audiometer, Model D-5.

The unit is calibrated in 5 decibel steps. Phones are separately calibrated and each instrument is adjusted for use with a particular phone. Separate output connections are provided for bone and air conduction. A masking device may be obtained also having an intensity output of about 50 decibels. A crystal microphone and a dynamic type receiver with stable characteristics are employed. Records are made of the output of each receiver and recorded against the serial number of the instrument to which it is matched, so that it can be replaced and duplicated from records kept of the particular audiometer purchased. Separate units are supplied for alternating and direct current. With the exception of the tubes, the Maico instrument is guaranteed for one year.

Frequencies Provided and Intensity Range

Test Tone Cycles per Second	Intensity Range Decibels
64	65
128	70
256	80
512	100
1,024	100
2,048	100
2,896	100
4,096	100
5,792	80
8,192	80
11,584	70

A number of these units were submitted to a laboratory acceptable to the Council for testing. The "Proposed Minimum Specifications of the American Standards Association (December 1, 1937)" were followed by the laboratory as a guide in preparing the following report. These standards of the American Standards Association are comparable to the "Minimum Requirements for Acceptable Audiometers" adopted by the Council (THE JOURNAL, Feb. 25, 1939, p. 732).

Tests were conducted by operating the audiometers with 60 cycles alternating current at 115 volts. The instrument complied with the specifications in the following respects:

1. Range of frequency of test tone.
2. Control of intensity.
3. Accuracy of frequency.
4. Audiometer calibration.
5. Purity of tone.
6. Extraneous noise.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Maico Audiometer, Model D-5, for inclusion on the Council's list of accepted devices.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 13, 1940

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.

2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.

3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.

4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.

5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.

6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.

7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.

8. Expansion of public health and medical services consistent with the American system of democracy.

EPITHELIAL FUNCTIONAL REJUVENATION AND ITS SIGNIFICANCE

Amid the usual cells of the epithelial lining of the alimentary tract peculiar cells are present which possess the power to reduce metallic salts and which are commonly known as argentaffin cells. It is generally held that these cells are of entodermal origin but their exact source remains unknown. Their function has been linked with metabolism of carbohydrates, production of secretin, secretion of epinephrine, formation of antianemic factor, digestion, and absorption. Actually, not a single concept pertaining to their function can stand objective criticism. In closing their review on this subject, the Macklins [1] conclude that the most that can be said of the function of these cells is that we know nothing about it.

Popoff [2] has recently studied this problem by using new histochemical methods which permit him to trace the genesis and metamorphosis of the argentaffin cells. He concludes that they originate from mucous (goblet) cells in the intestine and from parietal, cardial and pyloric cells in the stomach. According to his studies the mucous cells of the intestine and the parietal cells of the stomach function for a long time, passing many times through successive and repeated phases of secretion. When finally the secreting cell reaches the stage of functional exhaustion it does not perish but becomes refractory, loses its response to normal and artificially applied stimuli and undergoes a rearrangement or cytomorphosis manifested by certain nuclear and cytoplasmic changes, the latter being manifested by the appearance, progressive accumulation and gradual disappearance of argentaffin substance. In the course of this metamorphosis the cell changes its position, dedifferentiates and returns eventually to the state of a normal secreting cell. The specific metamorphosis is not related to the elaboration of exocrine or endocrine secretion. The biologic ability of certain highly differentiated secreting cells to maintain their longevity and usefulness by cyclic returns, when functionally exhausted, to their primitive afunctional state, followed by return to their original functional efficiency, is called functional rejuvenation by Popoff. The phenomenon is of paramount importance in restoring functionally exhausted mucous and parietal cells to their normal state of function. The ability to rejuvenate makes unnecessary continuous replacement of worn out cells by means of regeneration and makes understandable the discrepancies—so far unexplainable—between the scarcity of cellular regeneration and the wear and tear to which the cells of the alimentary tract are subjected continuously.

When, from local or general causes, the functionally exhausted cells are unable to rejuvenate, they degenerate. Then regeneration is called on to replace the dead elements; when unchecked, such regeneration may take the course of a neoplastic process. This interference with rejuvenation explains the scarcity or absence of argentaffin cells in intestinal areas above obstruction, in constipation, in ulcerative colitis, in nutritional deficiencies, in pernicious anemia and in advanced age. The argentaffin cells or, as Popoff calls them, rejuvenocytes, are found in carcinoid tumors, in benign solitary polyps and in some areas of highly differentiated destructive adenomas. Their presence is a good sign, indicating that the life of the tumor is perpetuated by cellular rejuvenation and explaining the scarcity of regeneration (mitoses) in such relatively benign tumors. Whenever there are in tumors mucous cells capable of function and of rejuvenation there are found argentaffin cells. This makes understandable the fact that these cells are found even in such distant tumors as

1. Macklin, C. C., and Macklin, M. T.: The Intestinal Epithelium, in Cowdry, E. V.: Special Cytology: The Form and Functions of the Cell in Health and Disease, ed. 2, New York, Paul B. Hoeber, Inc. **2**: 233, 1932.

2. Popoff, N. W.: Epithelial Functional Rejuvenation Observed in the Mucous Cells of the Gastrointestinal Tract and the Parietal Cells of the Stomach, Arch. Path. **27**: 841 (May) 1939.

pseudomucinous cysts and teratomas of the ovary.[3] The concept of functional rejuvenation offers new and important information about the cytology of the gastrointestinal tract and it aids the understanding of a number of physiologic and pathologic problems connected with the digestive system.

FREQUENCY OF CONGENITAL MALFORMATIONS IN FAMILIES

Little is known concerning the predisposition of families toward congenital defects. Murphy[1] in Philadelphia studied the families of those whose names appeared on death certificates with a diagnosis of congenital malformation during the five year period 1929-1933. During this period there were 130,132 deaths and stillbirths from all causes. Among the certificates 1,476 recorded congenital malformations, of which 890 were adequately confirmed. From analysis of the information obtained it was concluded that gross congenital malformations, as recorded on death certificates, afflict approximately one of every 213 individuals who are born alive. About a quarter of those born congenitally malformed are stillbirths. The malformation rate is about twice as high in white persons as among Negroes. In this series the frequency of birth of subsequent malformed offspring was twenty-five times greater in families already possessing a malformed child than in the general population.

Relation was not demonstrated between frequency of malformation and such factors as illegitimacy, economic or social status, chronic illness at the time of conception, pelvic disease prior to conception, season of the year, health of the mother or placenta praevia. The older the mother, however, the more likely was she to give birth to a congenitally deformed child. The later born children in a family are more likely to be congenitally malformed than are the first born. The malformed child is less likely to go to term than the normally developed sibling. Periods of relative sterility are likely to precede the births of congenitally malformed children. In families possessing two or more malformed children, the defects in the subsequent offspring are identical with those in the previous defective in approximately 50 per cent of instances. The diets of the mothers of defective children are found to be significantly lacking in adequate amounts of calcium, viosterol, iron and vitamins B, C and D.

Altogether these investigations lead to the conclusion that gross human congenital malformations arise solely from influences which affect the germ cells prior to fertilization. Evidence available did not indicate that they result from factors that operate for the first time after fertilization has taken place. Further, the evidence indicates that the couples who give rise to malformed offspring are reproducing inefficiently. Efficient mating, in the sense employed, is considered that in which reproduction occurs at will; all offspring are carried to term, are born alive and are normally developed both mentally and physically. Couples with inefficient matings possess, it seems, an excessive probability of having malformed children. With these considerations in mind the physician must decide how to answer questions from parents of a congenitally malformed child. He may tell them, Murphy states, that they have a greater chance of having another malformed child than other couples and that the chance of having another defective child is increased if one or both of the parents are well advanced in years. Further, they may be told that the occurrence of malformation depends on the character of the egg or sperm before fertilization rather than on any influences acting on the already fertilized egg and that malformations are not due to syphilis or any other disease of the parents.

The conclusions reached by this study are well documented and, although requiring confirmation, of course, can serve as the basis for much intelligent professional advice to the unfortunate parents of malformed children.

3. Stewart, M. J.; Willis, R. A., and de Saram, G. S.: Argentaffin Carcinoma (Carcenoid Tumor Arising in Ovarian Teratomas, J. Path. & Bact. 49:207 (July) 1939.

1. Murphy, D. P.: Congenital Malformations, Philadelphia, University of Pennsylvania, 1939.

NATIONAL FOUNDATION FOR INFANTILE PARALYSIS

Again on January 30 the nation will celebrate the birthday of President Franklin Delano Roosevelt with a series of festivities designed to yield additional income for the National Foundation for Infantile Paralysis. This foundation was organized Jan. 3, 1938, as a nonprofit membership corporation in the interest of the crippled. The foundation is managed by a board of trustees, and the scientific and educational activities are in charge of physicians and educators of distinction. At present the work of the foundation is concerned with national and local activities. The national body makes grants for research, supporting specific projects in fully accredited institutions after approval by one or more of the medical committees. The projects which are approved receive grants on a budget basis for one year, at the end of which time an accounting is made to the foundation and all unused funds are returned. Forty-four grants have been made, of which eighteen were approved by the Committee on Virus Research, twenty-three by the Committee on Research for the Prevention and Treatment of After-Effects, three for epidemic or educational purposes, and in addition a hospital and educational center has been established at Tuskegee Institute. Moreover, the foundation has supported an exhibit at the New York world's fair, has distributed its publications widely and has aided in the development of splints and frames.

All of the net proceeds from the celebration in 1938, amounting to $1,010,378.14, were received by the foundation. In 1939, 50 per cent of the net proceeds of the birthday celebration, after the expenses of the national campaign had been deducted, were received by

the foundation. This amount was $600,000. The remaining 50 per cent was left in the communities throughout the United States for local relief and to this amount was added, through the efforts of the foundation, $50,000 as a contribution from the Will Rogers Memorial Commission. The balance sheet of the National Foundation for Infantile Paralysis, as of Sept. 30, 1939, shows total assets amounting to $1,271,027.25. Among the expenses listed for the period from its establishment to the foregoing date have been grants to institutions and others for purposes previously indicated, amounting to $463,972.67; rent and building services, $4,196.16; and salaries and wages, $30,396.41.

The president of the National Foundation for Infantile Paralysis is Mr. Basil O'Connor, a lawyer of New York, formerly a partner of President Roosevelt. In both the financial and the scientific direction of the foundation he has been guided by men of experience. The annual report is a model for its succinctness of expression and for the evidence which it offers of the efficiency and economy with which the funds have been administered.

Current Comment

POLIOMYELITIS VIRUS IN SEWAGE

The repeated isolation of the virus of poliomyelitis from human feces [1] together with the recently reported isolation from urban sewage [2] seems to challenge generally accepted theories of the epidemiology of this disease. During a recent poliomyelitis epidemic in Charleston, S. C., numerous samples of municipal sewage were collected by Paul and his colleagues [2] from various sites throughout the city, particular attention being paid to one pumping station. Here the sewage came from parts of the city in which most of the cases of poliomyelitis had occurred. Eight liter samples of this sewage were allowed to stand in a tall glass bottle for twenty-four hours, with ice packed about the base of the bottle most of the time. At the end of two hours and twenty-four hours 200 cc. samples of the resulting sediment were drawn off from each bottle and about 10 per cent ether was added to serve as a bactericidal agent. The etherized sediment was then sent to New Haven, Conn., where doses of from 25 to 125 cc. of each sample were inoculated intraperitoneally into monkeys. Of the six monkeys thus far inoculated, four have died or been killed after developing acute peritonitis or extensive abscesses of the abdominal wall. Evidently 10 per cent ether is not an effective bactericidal agent. Two of the monkeys, however, did not develop a local bacterial infection but came down with typical poliomyelitis after an incubation period of about eight days. Typical cord lesions were demonstrated at necropsy in these monkeys. Successful transmission of poliomyelitis to a second monkey was accomplished by cord to cord inoculation. The authors conclude that poliomyelitis virus was present in effective concentration in at least two samples of municipal sewage. Whether or not the presence of active virus was a direct or indirect cause of the epidemic was not determined.

1. Harmon, P. H.: The Use of Chemicals as Nasal Sprays in the Prophylaxis of Poliomyelitis in Man, J. A. M. A. **109**:1061 (Sept. 25) 1937. Trask, J. D.; Vignec, A. J., and Paul, J. R.: Poliomyelitis Virus in Human Stools, J. A. M. A. **111**:16 (July 2) 1938. Kramer, S. D.; Hoskwith, B., and Grossman, L. H.: J. Exper. Med. **69**:49 (Jan.) 1939.

2. Paul, J. R.; Trask, J. D., and Culotta, C. S.: Science **90**:258 (Sept. 15) 1939.

PRESIDENT ROOSEVELT RECOMMENDS PURCHASE OF SITE FOR NEW ARMY MEDICAL LIBRARY BUILDING

The acquisition of a site for a new Army Medical Library and Museum building in Washington was recommended by the President in the budget for the fiscal year of 1941, which he submitted to Congress January 4. The budget contemplates that the Congress shall appropriate $600,000 for the purchase of the site and for preliminary expenses in connection with the building to be constructed and that the site be selected on East Capitol Street, in Washington, adjacent to the Congressional Library group. Thus moved one step further toward fruition the hopes and petitions of physicians that a structure be provided in which the vast collection of invaluable medical literature comprising the Army Medical Library, often spoken of as the Surgeon General's Library, may be safely and adequately housed. The Seventy-Fifth Congress authorized the construction of such a building to cost $3,750,000 but did not appropriate any money to make effective its authorization. The recommendation contained in the budget for 1941 is now before the Committee on Appropriations of the House of Representatives.

AMERICAN WOMEN ARE GETTING THINNER

For many years the public has been steadily bombarded with propaganda concerning the perils of obesity. Much of it is based on sound statistical evidence of the shorter longevity and greater liability to certain types of disease shown by overweight people. The inevitable result is now evident in the figures of average weights of women insured in the Ordinary Department of the Metropolitan Life Insurance Company.[1] The tabulation of the average weights at various heights according to age in 1922-1923 as compared to those in 1932-1934 showed that in all but a few instances there has been a decline in the average weight for each height at every age. The extent of the declines is not large and is usually from 3 to 5 pounds. It is perhaps surprising, however, that the declines are fairly uniform for the various ages and have been as great for older as for younger women. It would be rash, however, to ascribe the general decline in the average weights of women exclusively to the influence of health education and fashion, since modifications in eating habits represented by a gradual change from the emphasis on quantitative caloric needs to the present consideration of qualitative needs, which stresses the value of so-called protective foods, has also occurred in an apparently quite independent manner.

1. American Women Getting Thinner, Statistical Bulletin, Metropolitan Life Insurance Company **20**, No. 11 (Nov.) 1939.

ORGANIZATION SECTION

MEDICAL EDUCATION IN THE UNITED STATES, 1934-1939

Condensation of a book just published containing a report to the Council on Medical Education and Hospitals on the status of American medical schools

Not only in scientific investigation and discovery, in private practice and public health, but also in the field of education, American medicine has won for itself a place of unquestioned preeminence. The critical study of medical schools initiated by the American Medical Association in 1901 constituted the pioneer educational survey in this country and became, in many respects, a model for those that followed. The achievements of the Council on Medical Education in raising the standards of medical education and practice have served as a stimulus and example to other professions. More recently, in accordance with the request of the Association of American Medical Colleges, undertook another nationwide survey of medical education. All the recognized medical schools in the United States and Canada were visited, and the data gathered have now been compiled and published by the Council in a volume entitled "Medical Education in the United States, 1934-1939."

Without naming individual schools, the report prepared by Weiskotten, Schwitalla, Cutter and Anderson describes in general terms the organization and administration, the faculty and student personnel, and the clinical and financial resources of the medical schools, thus presenting an objective picture of medical education in this country for the years under review.

THE UNIVERSITIES AND THE MEDICAL SCHOOLS

The influence of universities in medical education had developed rapidly in the last thirty years. At the time of the survey, fifty-seven of the sixty-six four year schools of medicine in the United States were, officially at least, parts of universities. There was, however, wide variation in the nature and significance of this relationship. Of the many ways in which it might be analyzed, perhaps the simplest and most illuminating is a financial study. A university which contributes largely to the support of its medical school gives convincing evidence of its consciousness of an obligation to medical education and of its unhesitating acceptance of that responsibility. On the other hand, a university which makes no contribution to the school of medicine or which actually absorbs for general university purposes a part of the income of the medical school may be more of a hindrance than a help to medical education. The pattern of university organization may vitally affect the educational program of the school of medicine. Institutions in which administration is highly centralized not infrequently subordinate the aims and purposes of professional schools to such a degree that the faculty and students of medicine lose consciousness of the elevated dignity and social responsibility of their calling.

Of the fifty-seven universities with medical schools, twenty-four were tax supported and thirty-three voluntarily supported. Of the twenty-four maintained by public funds, twenty-one were state institutions and three were municipal universities. Among the thirty-three private institutions, eight received church support. However, some of the privately controlled universities received governmental aid in the form of public appropriations and some of the publicly controlled institutions received gifts and endowments from private sources. State appropriations for universities having medical schools ranged from $226,000 to $6,588,000, university expenditures from $400,000 a year to $14,500,000. That medicine is by far the most costly of the various types of professional education is shown by table 1.

ORGANIZATION AND ADMINISTRATION OF THE MEDICAL SCHOOL

Of the sixty-six four year schools of medicine in the United States, seven were completely independent organizations without university connection. Patterns of organization and administration reflecting doubtless local situations prior to university affiliation were markedly diverse. Responsibilities of the dean and of the faculty to one another and to the school were variously and sometimes vaguely defined.

The geographical location or separation of the school presents a problem peculiar to medicine. For obvious reasons the medical school, or at least its clinical division, must be located in a large center of population and in close proximity to the hospitals used for teaching. Consequently some medical schools are located apart from the university campus, possibly in the same city but several miles away, in some instances at a distance of from 50 to 200 miles. Again, the medical school itself may be divided, the preclinical sciences being taught in one place and the clinical branches in another. Such scattering of its component parts cannot be in the best interest of the university or promote the unity of medical education.

The influence which the dean may exert on the development of his school was clearly manifested during the survey. Some schools consciously availed themselves of this means of stimulating growth; others complacently accepted the concept of the dean as a mere figurehead. Faculties likewise assumed or accepted varying degrees of responsibility for the school's educational program, according to the fundamental philosophy of the institution. Examples were found of the extremes both of centralization and of decentralization.

THE FACULTIES OF MEDICAL SCHOOLS

In the evaluation of schools of medicine no single factor could be of greater importance than the competence of the faculty, provided such competence could be objectively determined. Direct measures, however, of the teachers' ability are unfortunately wanting. In this study an approximate estimate of competence of teaching personnel on the basis of the time spent in graduate study, the amount and kind of teaching experience, together with membership in scientific societies, attendance on and participation in scientific meetings and the publication in recognized journals of the results of original investigation was obtained. Effective teaching, in medicine at least, requires an intimate teacher-student relationship. As a guide in determining how far the development of such a relationship was possible, the teacher-student ratio was computed for the com-

bined departments of the basic medical sciences. This ratio varied from 1:2 to 1:12, with an average of 1:5. These figures clearly revealed overcrowding in some institutions.

In the long run the salaries offered by a school of medicine will be reflected, with some allowance for environment, in the competence and ability of the faculty. The maximum salary payable to a professor in the basic science departments ranged from $2,240 to $16,000, surely an unwarrantable spread. Since it is not easy to assume that the highest salaries were too large, the conclusion is inescapable that the lowest salaries were far too low.

TABLE 1.—*Comparison of Instructional Costs in Various Professional Schools*

School	Cost per Student Credit Hour
Agriculture	$14.51
Engineering	10.52
Education	4.06
Commerce	5.92
Law	11.03
Dentistry	15.87
Medicine	26.96

SELECTION OF STUDENTS

The importance of careful selection of students of medicine cannot be overstated. No other element in medical education is so significant for the future. Schools of medicine are in a fortunate position as compared with other professional schools in that they receive annually applications from more than twice as many candidates as they can accept. Many factors enter into the selective process, but notwithstanding the vast amount of time, thought and effort devoted to it the results are not yet wholly satisfactory. Entrance requirements have been progressively raised, but the mere accumulation of college credits is no guaranty of fitness for the practice of medicine. A qualitative appraisal of the candidate's scholastic record is a better though by no means perfect criterion. Recently there has been developed an aptitude test which some institutions believe yields information of value.

A criticism of medical schools, frequently voiced, is that a student dropped from one institution will not be accepted in any other. If the school in which he originally enrolled has made a conscientious effort to assist him in adjusting himself to the demands made on him there should be no occasion for concern.

THE INTERNSHIP

The internship was not included in the scope of this study. Fifty-two of the sixty-six four year schools conferred the degree of Doctor of Medicine at the end of the four year curriculum, indicating thereby that they regarded the internship as a phase of graduate rather than undergraduate education.

THE CURRICULUM

As a professional institution the medical school considers its curriculum a unified whole. The organization of the faculty into departments, each having its own responsibility, does not imply the independence of the several units to the extent that is usual in college or other divisions of the university and, in some instances at least, it would appear that the objective of medical education is in conflict with efforts to diffuse the services of the departments of the basic medical sciences throughout the whole range of university activities.

THE CLINICAL CLERKSHIP

The culmination, as well as the unique feature, of the medical curriculum is the practical experience of dealing with patients which the student obtains during his clinical clerkship. In the hospital ward and dispensary he is given the opportunity under supervision to take histories and examine patients, to make all necessary laboratory tests, and then, having weighed the evidence, to formulate his own diagnosis and outline the indicated treatment. From day to day he follows the patient's course until the time of his discharge. Not all the schools had developed clerkships that were wholly satisfactory, owing in some cases to the lack of sufficient clinical facilities.

THE LIBRARY

Perhaps no department is more vitally essential to the educational program of a medical school than its library, reflecting as it does the scientific interest of both students and faculty. Since the study and practice of medicine is something more than an art and a philosophy, and since it is dependent on the advances in related fields of scientific endeavor, it is necessary for the modern medical library to include in its resources something of the literature of those sciences on which it so heavily depends. The value of the service of the library is contingent on its accessibility, on the periodicals, monographs and reference works it contains and, above all, on the educational background and ability of the librarian and staff to provide something more than technical service, namely an appreciation of the function of the library. The number of periodicals currently received by medical school libraries ranged from twenty-five to 625. The number of foreign language journals was not infrequently an index of the breadth of scientific interest on the part of faculty and

TABLE 2.—*General Hospital Beds, 1936*

Location of Medical Schools	General Hospital Beds per Student
Little Rock, Ark.	4.5
Los Angeles	19.7
San Francisco	24.5
Denver	30.1
New Haven, Conn.	9.1
Washington, D. C.	11.4
Atlanta, Ga.	12.8
Augusta, Ga.	4.8
Chicago	14.4
Indianapolis	9.3
Iowa City	5.8
Kansas City, Kan.	5.1
Louisville, Ky.	10.2
New Orleans	9.8
Baltimore	13.1
Boston	8.2
Ann Arbor, Mich.	6.3
Detroit	36.8
Minneapolis	13.6
St. Louis	10.5
Omaha	6.3
Albany, N. Y.	17.2
Buffalo	20.1
New York	32.0
Rochester, N. Y.	24.5
Syracuse, N. Y.	11.5
Durham, N. C.	4.6
Cincinnati	17.9
Cleveland	37.9
Columbus, Ohio	9.6
Oklahoma City	9.9
Portland, Ore.	16.8
Philadelphia	10.5
Pittsburgh	32.2
Charleston, S. C.	5.1
Memphis, Tenn.	8.3
Nashville, Tenn.	5.6
Dallas, Texas	6.5
Galveston, Texas	5.0
Burlington, Vt.	2.8
Charlottesville, Va.	3.3
Richmond, Va.	6.1
Madison, Wis.	10.3
Milwaukee	14.8
	14.2

students. In fifty-four schools, library budgets ranged from $1,500 to $50,000 annually, with a median of $7,200. Library expenditure for each student ranged from $3.41 to $181.

CLINICAL FACILITIES

Since medicine can be learned only by observing and examining sick people, the school of medicine must have under its control a sufficient amount and variety of clinical material to enable its students to become thoroughly familiar with all the more common manifestations of disease and to be able to recognize at least those which are less common. That it may not always be easy to satisfy this requirement is evident from table 2, which shows the ratio between the number of medical students in third and fourth year classes and the number of general hospital beds in cities where medical schools are located.

FINANCIAL RESOURCES

No evaluation of medical schools would be complete without a study of financial resources and administration. The sixty-six four year schools of medicine had,

TABLE 3.—*Income*

	Total	From Other than Student Fees	Percentage from Other than Student Fees
Maximum	$1,650,434	$1,427,426	90.5
First quartile	407,982	307,325	79.4
Median	222,927	110,283	60.5
Third quartile	154,775	51,200	28.8
Minimum	93,954	3,743	3.7
Average	$ 338,644	$ 225,954	55.3

Figures on the same line in the several columns do not, except by chance, refer to the same institution. Percentages are not derived from figures in other columns.

at the time of the survey, a combined annual income of $22,345,483 and a combined expenditure of $21,491,248. For instructional costs, largely salaries, and supplies incidental to instruction, the sum of $17,047,865 was spent. The sources from which income was derived were student fees, endowment funds, special gifts and grants, government subsidies, subsidies for services rendered and contributed services. The range of income and the amount derived from sources other than student fees are shown in table 3.

The average income for each student in state and municipal institutions was $693.91, as compared with $1,230.78 in medical schools privately controlled. It is generally believed that of all figures obtainable from an analysis of budgets the one that most nearly indicates the relative excellence of the institution is the expenditure for instruction for each student. In the medical schools this figure ranged from $170 to $3,609, with a median of $535 and an average of $843.

ANATOMY

The development of medicine as a science had its earliest beginnings in the study of anatomy, and no subject is more fundamental. Physical facilities for the teaching of anatomy were, in general, satisfactory so far as the students were concerned, but the provision made for the members of the staff was often inadequate. Expenditure by the department of anatomy varied from $89 to $923 for each student, with a median of $273. The time allotted to the subject in the curriculum varied from 220 to more than 600 hours. Paradoxically, the weaker schools were often those making the heaviest assignments of time. There was clearly manifested a trend toward a dynamic conception of anatomy. There was evident also a definite need for broadly trained anatomists who have a clear understanding of the objectives of the undergraduate medical course.

BIOCHEMISTRY

While instruction in biochemistry was believed to be, on the whole, more satisfactory than in any other of the preclinical sciences, there were fewer medical graduates among the departmental staff. In fact, in more than half of the sixty-six four year medical schools there were no teachers of biochemistry who held medical degrees. Plant and equipment were rather generally sufficient. The median budget allotment was $145 for each student. In a number of schools there was no separate department of biochemistry but this subject was combined with physiology or pharmacology. In all but three schools the basic course in biochemistry was given in the first year. Many of the departments of biochemistry carried heavy responsibilities to others than medical students, notably dental students and students from the graduate school. In spite of these obligations, scientific interest and productive research, as evidenced by the number of publications, have been even more manifest in biochemistry than in other preclinical sciences.

PHYSIOLOGY

In physiology the medical student may have his first real contact with biologic experiments and an opportunity to become familiar with those methods of investigating function which later he will apply in his study of patients. The teaching of physiology was handicapped by inadequate facilities or poor equipment in a considerable number of schools. Crowding was more evident than in other departments of the basic medical sciences. Financial support ranged from $55 to more than $1,000 per student. The ratio of teachers to medical students ranged from 1:6 to 1:74. The median ratio was 1:18. Teachers of physiology ranked high, judged by the number of them who were members of national scientific societies. The average time devoted to physiology in the medical curriculum was 240 hours and there was evident a tendency to complete the course during the first year.

PHARMACOLOGY

Pharmacology was the Cinderella of the basic medical sciences. Some schools did not recognize it as an independent discipline. More frequently than any other of these sciences it held a subordinate position in a combined department. Where independent, its budget ranged from $55 to $447 for each student, the median figure being $145. Of the 141 teachers of pharmacology with professorial rank, eighty-nine were members of one or more societies related to their field, but there were fifteen schools in which no one of the faculty held such membership. The importance of pharmacology has recently been emphasized by Raymond B. Fosdick, president of the Rockefeller Foundation, yet this science is hampered by lack of adequate support with a consequent shortage of well trained younger men to fill vacant professorial chairs.

BACTERIOLOGY

During half a century, and until very recently, the most striking advances in the field of medicine were made in bacteriology; but these discoveries have had the greatest practical importance through their applications to the prevention and cure of disease. For all that, only nineteen of sixty-six schools had set up independent departments of bacteriology. Combined with

other departments it frequently played a minor role. Because of the number and variety of these combinations, budget allowances were difficult to compute. Many departments had responsibilities to other than students of medicine. Immunology was for the most part included in the program of the department of bacteriology.

PATHOLOGY

The placing of medicine on a scientific foundation was due largely to advances made in the field of pathology. It is highly essential, therefore, that students of medicine acquire an understanding of what is known of the fundamental principles involved in the various types of pathologic reactions in order that they may be prepared to apply these principles in their consideration of the various clinical manifestations of disease. A few departments of pathology were definitely handicapped by lack of space. Financial support ranged from $78 to $1,030, with a median figure of $262. In all but one of the sixty-six schools the director of the department of pathology was a physician. Some departments were heavily burdened with outside responsibilities, especially in connection with other than university hospitals.

MEDICINE

Recognizing that the primary purpose of medical education is to prepare a scientifically trained personnel for the diagnosis, treatment and prevention of disease in man, it should be obvious that the goal of all the student's efforts to secure a mastery of the basic sciences is to enable him to deal intelligently with the problems of clinical medicine. In the department of medicine the student has his first personal and professional contact with sick persons. He encounters an endless variety of personalities influenced by heredity, environment, illness and a host of social and economic factors any or all of which may profoundly influence his medical problem. It is precisely here that the character of the student and his attitude toward life and toward his fellow man assume an importance equal to that of his scientific attainments.

While many of the departments of medicine were functioning without any physical facilities whatever for their exclusive use, the higher ranking departments were provided with their own quarters, consisting of offices and laboratories, both for teaching and for research. Financial support for the department of medicine ranged from $450 to $319,000, with a median figure of $23,000.

In medicine, especially, the clinical clerkship is the essence and the culmination of the educational program. For this, clinical material, adequate in kind and amount, accessible and under academic control, is an absolute necessity. Not too many of the medical schools were fortunately situated in this respect. Those which were more progressive attempted so to arrange the curriculum that each group of students received its initial clinical experience in the department of internal medicine and also made this assignment of longer duration than the time allotted to surgery, pediatrics or obstetrics.

SURGERY

In recent years the position of surgery in the undergraduate curriculum has been seriously questioned. As a recognized specialty there would seem to be no excuse for requiring every student to become proficient in the technic of major operative procedures. On the other hand, an understanding of the various injuries and pathologic states which may be treated surgically, and of the principles involved in such treatment, is undoubtedly an essential part of the training of every physician. The teaching of surgical pathology, where it was well done, was often the outstanding contribution of the department of surgery. The treatment of emergencies was a phase of surgical teaching for which, in many instances, inadequate provision was made. Sixty-three departments of surgery had budgets which ranged from $159 to $247,500, the median figure being $11,131.

OBSTETRICS AND GYNECOLOGY

In recent years there has been, apparently, a tendency to combine obstetrics and gynecology in a single department. Certainly no one can be considered fully competent in either of these fields unless he has had instruction and experience in the other. Nevertheless, the requirement of practice in the two fields, and the education, experience and interests of faculty members are such that a complete combination and integration of these subjects has rarely been found to be practicable. The importance of sound training and adequate experience in the fundamentals of obstetrics is manifest from the fact that more than 25 per cent of recent medical graduates now locate in communities with a population of less than 5,000.

Clinical facilities for the teaching of obstetrics differed somewhat from those required by other clinical departments in that many schools relied largely on a home delivery service to provide practical experience for the students. Under adequate supervision this plan has much to commend it, but nothing can be said in defense of the custom of sending students into patients' homes to manage deliveries with no instructor present. In some schools practical obstetrics is an elective offered to only a fraction of the class. It is sometimes asserted that sufficient clinical material is not available to pro-

TABLE 4.—*Annual Births in Cities in Which There Are Medical Schools, 1936*

Location of Medical Schools	Ratio of Births to Graduates
Little Rock, Ark.	27
Los Angeles	153
San Francisco	72
Denver	110
New Haven, Conn.	69
Washington, D. C.	49
Atlanta, Ga.	106
Augusta, Ga.	35
Chicago	81
Indianapolis	55
Iowa City	17
Kansas City, Kan.	31
Louisville, Ky.	61
New Orleans	56
Baltimore	81
Boston	50
Ann Arbor, Mich.	8
Detroit	375
Minneapolis	62
St. Louis	61
Omaha	29
Albany, N. Y.	98
Buffalo	157
New York City	215
Rochester, N. Y.	117
Syracuse, N. Y.	79
Durham, N. C.	35
Cincinnati	120
Cleveland	251
Columbus, Ohio	54
Oklahoma City	65
Portland, Ore.	80
Philadelphia	56
Pittsburgh	204
Charleston, S. C.	56
Memphis, Tenn.	48
Nashville, Tenn.	40
Dallas, Texas	64
Galveston, Texas	12
Burlington, Vt.	20
Charlottesville, Va.	5
Richmond, Va.	44
Madison, Wis.	32
Milwaukee	155
	84

vide for each student the opportunity personally to conduct a reasonable number of labors. In table 4 is shown, for each of the cities in which medical schools are located, the number of births annually divided by the number of senior medical students. Obviously not all the births occurring in a community are available for teaching, but the table shows that for most of the schools an adequate amount of obstetric material is at hand if the school is determined to secure proper control. On the other hand, in places where the number of births for each student falls below fifty it may be questioned whether there is any possibility of conducting a satisfactory course in obstetrics without having recourse to the clinical resources of larger cities.

PEDIATRICS

Pediatrics has led all clinical branches in emphasizing the preventive aspects of medicine. Although the number of physicians limiting their practice to pediatrics has greatly increased in recent years, it is still true that the majority of children are cared for by general practitioners and not pediatricians. Medical schools, therefore, are obliged to lay a sound foundation and give adequate preparation for this type of practice.

In respect to clinical facilities, this department has fared unusually well. Financial support ranged from $464 to more than $100,000, with a median of $5,100. The educational program followed, in general, the trend of other clinical departments, especially medicine. Clerkships in hospital and dispensary were the salient features of the instruction.

CLINICAL SPECIALTIES

During the course of the survey no attempt was made to study completely the teaching in the specialties of medicine for, as a matter of fact, these subjects were receiving less attention in the undergraduate curriculum. No effort is being made to produce of the average medical student a composite specialist. More and more clearly it has been recognized that adequate preparation for special practice requires intensive training at the graduate level; consequently there has been a tendency to shift the teaching of the specialties to the graduate school, to fellowships or to residencies. This trend in some instances, however, has led to such neglect of the specialties in the undergraduate curriculum that some recent graduates find themselves unable to make a complete examination of a patient or to determine for themselves whether or not he should be referred to a specialist. Medical schools might well define clearly their responsibilities in this field.

RECENT DEVELOPMENTS

Following the survey, there was sent to each school a graphic report or pattern map which indicated by comparison with others the rank of each school with respect to nearly a hundred criteria of excellence. Deans and faculties in many schools found these charts of value in calling attention to special needs.

Recent years have been marked by conspicuous advances in the field of medical education. In a considerable number of institutions there have been noted substantial improvements in organization and administration, in student selection and in physical and clinical facilities, with a greater measure of financial support. Since the publication of the Council's first classification of medical schools and the Carnegie report, there has been probably no five year period which has witnessed such activity and progress in the field of medical education.

MEDICAL BILLS IN THE SEVENTY-SIXTH CONGRESS

Prepared by the Bureau of Legal Medicine and Legislation, American Medical Association, December 1939

This survey of federal legislation of interest to the medical profession covers the first regular session of the seventy-sixth Congress, which convened Jan. 3, 1939, and adjourned August 5, and the second (special) session, which convened September 21 and adjourned November 3. During the special session no action was taken on any legislation of particular medical interest, although several bills in that category were introduced. The third session convened Jan. 3, 1940, and its adjournment will mark the end of the seventy-sixth Congress.

The legislation that has already been enacted or defeated and that now pending represents what has been proposed that is of interest to physicians.

I. LAWS ENACTED TO JAN. 3, 1940

Social Security Act Amendments

On Aug. 10, 1939, the President approved the "Social Security Act Amendments of 1939" (Public Law No. 379). This law amends in many important respects the Social Security Act of 1935. The original act devolved on the Social Security Board the duty of recommending methods to provide more effectively the objects sought by the act. An Advisory Council on Social Security was created in May 1937 jointly by the Senate Special Committee on Social Security and the Social Security Board to assist in studying the advisability of amending the act. This council made a final report Dec. 19, 1938. The Social Security Board submitted recommendations to the President December 30, which were transmitted to the Congress with a special message Jan. 16, 1939. On the basis of the President's message, the board's report and the public hearings which it held, the House Committee on Ways and Means submitted to the House a bill, H. R. 6635, embodying amendments to the Social Security Act. On June 10, the bill passed the House. In the Senate, it was referred to the Senate Committee on Finance. To that committee Senator Wagner, of New York, proposed that the bill be amended so as to authorize the Social Security Board to make provision for furnishing medical, surgical, educational, rehabilitation or other services to an ill defined class of persons unable to work because of remediable disabilities. The committee, however, refused to embody this proposal in the bill. On the floor of the Senate, another proposal by Senator Wagner was made a part of the bill, creating an Advisory Council on Disability Insurance to study and report on the establishment of disability insurance. The Senate passed the bill July 13. Conferees on the part of the Senate and House then met in an effort to compromise the differences in the bill as it passed the House and as it passed the Senate. After Senator Wagner's proposal to create an Advisory Council on Disability Insurance had been eliminated from the bill, the conferees agreed on all other differences, the House and Senate accepted the report of the conferees, and the bill finally became a law.

As already stated, important changes in the Social Security Act were effected by the new legislation. For maternal and child health, an increase of $2,020,000 is authorized; for services for crippled children, there is an increase of $1,020,000; for public health, an increase of $3,000,000 is provided; the exempted employments in the original act were broadened to include services performed as a student nurse in the employ of a hospital or a nurses' training school by an individual who is enrolled and is regularly attending classes in a nurses' training school chartered or approved pursuant to a state law, and services performed in the employ of a hospital by an intern who has completed a four years' course in a medical school chartered or approved pursuant to a state law; the old age insurance tax on employees and employers was frozen at 1 per cent for the years 1940, 1941 and 1942, and the benefits provided by the act were liberalized.

Foods, Drugs and Cosmetics

The provisions of the Federal Food, Drug, and Cosmetic Act, passed by the Seventy-Fifth Congress, relating to dangerous drugs, dangerous cosmetics and new drugs became effective on the approval date of the act, June 25, 1938. Certain other provisions relating to labeling and to the use of coal tar dyes in foods, drugs and cosmetics, were by the act made effective twelve months after the date of enactment. Prior to the expiration of that twelve month period, the President, on June 23, 1939, approved a law (Public Law No. 151) further extending the effective date of these provisions to Jan. 1, 1940, and directing the Secretary of Agriculture to promulgate regulations further postponing to July 1, 1940, certain provisions so far as they related to specified types of labeling and containers. In justification of the enactment of this legislation, the House Committee on Interstate and Foreign Commerce had this to say in its report (House Report No. 429):

> These provisions, [referring to the provisions whose effective date was postponed] in greater part, are designed to require informative labeling, in order that the purchasers may more intelligently select foods, drugs, and cosmetics for their needs, and in order to prevent the development of unfair competitive situations arising from labels which tell little or nothing.
>
> These provisions of the new law are sweeping in scope. They necessitate the revision of nearly all existing labels for these commodities.
>
> While great progress has been made by the affected industry in bringing about appropriate label revisions and otherwise changing their practices to meet the new law, there is a substantial proportion of the industries who now find it physically impossible to make the required changes by June 25 or who have on hand valuable stocks of labels acquired in good faith which meet fully the requirements of the old law but which fall short of the requirements of the new one.
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> . . . . . .
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> The situation which has thus arisen with respect to labeling and coal-tar colors is of such scope and importance that the Committee is of the opinion that the effective date of the requirements of the act responsible for the situation should be postponed until at least January 1, 1940.
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> Such postponement is proposed by section 1 of the bill. The requirements postponed are those with respect to the use of certified colors; the appearance on the label of the name and address of the manufacturer, packer, or distributor; definitions for standards of identity and standards of quality and fill of container for food with associated labeling requirements; appearance on the label of the name and ingredients of nonstandardized fabricated food; the appearance on the label of certain information concerning special dietary food and of artificial flavors, colors, and preservers in food; labeled statements of quantity of contents of drugs and cosmetics; labeled statements of habit forming properties and active ingredients of drugs; directions for use and warnings against probable misuse of drugs; official compendia labeling and packaging requirement for drugs; and labeled statements of precautions on deteriorating drugs.

On Dec. 2, 1939, the Acting Secretary of Agriculture promulgated regulations postponing the effective date to July 1, 1940, of the provisions of the act with respect to any type of lithographed labeling which was manufactured prior to Feb. 1, 1939, and to any type of containers bearing labeling which, prior to February 1, 1939, were lithographed, etched, stamped, pressed, printed, fused, or blown on or in such containers.[1]

Reorganization of Government Activities

On April 3, 1939, the President approved the "Reorganization Act of 1939" (Public Law No. 19), providing for an investigation by the President of all executive agencies of the government to determine what changes are necessary to place the operation of the government on an efficient and economical basis and for the submission to Congress of reorganization plans. This law specifically provides that no reorganization plan prepared by the President shall transfer, consolidate or abolish certain named agencies, such as the Federal Trade Commission, the Veterans' Administration, the Federal Communications Commission, and others. On April 25, the President submitted his First Plan on Government Reorganization (House Document No. 262). In this plan, the President proposed, in part, to set up a new agency to be known as the Federal Security Agency. To this new agency was to be transferred the United States Employment Service, the Office of Education, the United States Public Health Service, the National Youth Administration, the Social Security Board and the Civilian Conservation Corps. The Congress having failed to reject this plan, it became effective on the expiration of sixty calendar days after its date of submission.

Taxation of Incomes of Physicians Employed by Federal, State and Local Governments

The Revenue Act of 1939, approved June 29, 1939 (Public Law No. 155), extends certain excise taxes that otherwise would have expired, extends the three-cent postal rate on nonlocal, first class mail, revises to some extent the taxes imposed on corporations and effects other more or less general changes not of particular interest to the medical profession. Another law, however, approved April 12, 1939 (Public Law No. 32), will subject to federal and state income taxes the salaries of a certain group of physicians who heretofore have been exempt by reason of the source of their income. The Public Salary Tax Act of 1939 subjects physicians who are officers and employees of states, their political subdivisions or any agency or instrumentality of either to the taxes imposed by the federal income tax act, and the salaries of physicians who are officers and employees of the United States Government, any territory or possession or political subdivision thereof, the District of Columbia or any agency or instrumentality of any one or more of the foregoing may be subject to the income taxes imposed by the states in which the physicians are located. The

1. 4 Federal Register 4764, Dec. 5, 1939.

Senate Committee on Finance in Senate Report No. 112 had this to say about this law:

> At the present time, Federal employees are subject to Federal income taxes, but are exempt from State income taxes. State and local employees, on the other hand, are subject to State income taxes, but are exempt from Federal income taxes, unless engaged in proprietary functions. Persons in private employment are subject to both Federal and State taxes. . . .
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> Employees of governments receive all the benefits of government which their fellow citizens do, and consequently they should also bear their fair share of its costs. The elimination of the tax exemption privilege would not menace the operations of governmental units, but its existence does threaten the progressive income tax principle of "from each according to his ability to pay." Moreover, it discriminates among persons having the same actual income and offers to government no measurable compensating advantages. The unfair consequences of tax-exempt salaries when judged by present standards of social justice require that they be promptly abolished by legislation if this can be done under the Constitution.

Medical Care for Personnel of U. S. Coast and Geodetic Survey

Public Law No. 48, approved April 26, 1939, authorizes the Secretary of the Treasury to detail medical officers of the United States Public Health Service for duty on vessels of the United States Coast and Geodetic Survey. The law further provides that under regulations all commissioned officers, ships' officers and members of the crews of the vessels of the United States Coast and Geodetic Survey, including those on shore duty and those on detached duty, whether on active duty or retired, and all dependent members of families of such personnel, shall be entitled to medical, surgical and dental treatment and hospitalization by the United States Public Health Service on a parity with officers and enlisted men of the United States Coast Guard and their dependents.

Medical Care and Other Benefits for Veterans

There was enacted a law (Public Law No. 62) the effect of which is to grant medical and hospital benefits to those men who, prior to the enactment of the Economy Act of 1933, were considered Spanish-American War veterans for the purpose of hospitalization and domiciliary benefits.

Public Law No. 109 authorizes the Veterans' Administration to make payments to nonmilitary employees who donate blood for transfusions for veterans hospitalized in veterans' hospital facilities.

Another law (Public Law No. 198) provides, in part, that in the administration of laws pertaining to veterans, retired officers and enlisted men of the Army, Navy, Marine Corps and Coast Guard, who served honorably during a war period as recognized by the Veterans' Administration, shall be, and are, entitled to hospitalization and domiciliary care in veterans' administration facilities on parity with other war veterans.

Any World War veteran, under the provisions of Public Law No. 196, suffering from paresis, paralysis or blindness or who is helpless or bedridden as the result of any disability, and who was in receipt of compensation therefor on March 19, 1933, may be awarded compensation under the laws and interpretations governing this class of cases prior to the enactment of the Economy Act of 1933, even though the disability may have been occasioned by misconduct or wilful misconduct.

District of Columbia

HEALING ARTS PRACTICE ACT.—The President approved, Aug. 11, 1939, a bill to eliminate from the Healing Arts Practice Act of the District of Columbia the requirement that examinations be held on the second Monday in January and July of each year and provides that such examinations may be held at such times as the Commission on Licensure to Practice the Healing Art may by rule or by special order determine (Public Law No. 399). Two laws were enacted providing, respectively, for the issuance of licenses to practice chiropractic to George M. Corriveau (Private Law no. 143) and to Laura T. Corriveau (Private Law No. 144). Both of these individuals had failed to apply for their licenses within ninety days after the approval date of the Healing Arts Practice Act, as required by that act, and hence were not entitled to licenses without examination.

COMMUNICABLE DISEASES.—A law was passed authorizing the Commissioners of the District of Columbia to promulgate and enforce all such rules and regulations as they may deem necessary to prevent and control the spread of communicable and preventable diseases (Public Law No. 388). It repeals the following acts: (1) an act to prevent the spread of contagious diseases in the District of Columbia, approved March 3, 1897; (2) an act for the prevention of scarlet fever, diphtheria, measles, whooping cough, chicken pox, epidemic cerebrospinal meningitis, and typhoid, approved Feb. 1, 1907; (3) an act to provide for registration of all cases of tuberculosis in the District, for free examination of sputum in suspected cases and for preventing the spread of tuberculosis in the District, approved May 13, 1908, and (4) an act for the prevention of venereal diseases in the District of Columbia, approved Feb. 26, 1925.

HOSPITAL LIENS FOR SERVICES.—Another law provides that every hospital in the District of Columbia which furnishes medical or other services to any person injured by reason of an accident, the injuries not being covered by the Employees' Compensation Act or the Workmen's Compensation Act, shall, if the injured person asserts or maintains a claim against another for damages on account of such injuries, have a lien on that part going or belonging to such person (Public Law No. 161).

INSANITY PROCEEDINGS.—A law, approved Aug. 9, 1939 (Public Law No. 359), provides for insanity proceedings in the District of Columbia. The purpose of this law, as explained by the House Committee on the District of Columbia, is to simplify insanity proceedings in the District and to prevent the continuance of conditions that existed in the Gorgas Memorial Hospital's psychopathic ward due to lack of equipment and facilities for the handling of patients.

GROUP HOSPITALIZATION, INC.—A law was approved Aug. 11, 1939 (Public Law No. 395), providing for the incorporation of certain persons as Group Hospitalization, Inc. It authorizes the corporation (1) to enter into contracts with groups of individuals to provide for hospitalization of such individuals on payment of specified rates or premiums and to issue to such individuals appropriate certificates evidencing such contracts; (2) to enter into contracts with hospitals for the care and treatment of such individuals, in accordance with the terms of such certificates, and (3) to cooperate, consolidate or contract with groups or organizations interested in promoting and safeguarding

the public health. The incorporators are declared to be the first board of trustees of the corporation and their successors are to be appointed, one by the Commissioners of the District of Columbia, one by the Medical Society of the District of Columbia, and one by a group consisting of the president or chairman of the boards of trustees or other designated individual of each hospital with which the corporation shall have contracts for hospitalization.

Miscellaneous Laws Enacted

The Treasury Department Appropriation Act (Public Law No. 65) carries an increased appropriation for making effective the provisions of the National Cancer Institute Act, the appropriation being increased from $440,000 to $570,000.

Another law (Public Law No. 179) extends the benefits of the United States Employees' Compensation Act to members of the Officers' Reserve Corps and of the Enlisted Reserve Corps of the Army who are physically injured in line of duty while performing active duty or engaged in authorized training. Disability or death resulting from sickness or disease is compensable if such sickness or disease is proximately caused by service on active duty.

The compensation of members of the National Advisory Health Council not in the regular employment of the government is increased from $5 to $25 a day by Public Law No. 364.

Another law provides that there shall be in the United States Public Health Service a commissioned medical officer, detailed by the Surgeon General, to be known as the Assistant to the Surgeon General, and who shall perform such duties as the Surgeon General may prescribe (Public Law No. 345).

The registry of pursers and surgeons as staff officers on vessels of the United States, defined to mean any vessel registered, enrolled or licensed under the laws of the United States, but not including a fishing or whaling vessel or a yacht, is provided for by Public Law No. 251. The law provides that no applicant for registry shall be required to take an examination to qualify therefor but that the Secretary of Commerce shall require satisfactory proof of good character, citizenship and such minimum periods of service as he shall deem necessary to establish the requisite knowledge, skill and experience to qualify applicants. Applicants for registry as surgeons are required to possess a valid license as physician and surgeon under the authority of a state or territory of the United States or the District of Columbia.

Public Law No. 357 provides for the seizure and forfeiture of vessels, vehicles and aircraft used to transport narcotic drugs, firearms and counterfeit coins, obligations, securities and paraphernalia. Another law amends the federal law relating to the advance of funds in connection with the enforcement of acts relating to narcotic drugs so as to permit such advances in connection with the enforcement of the Marihuana Tax Act of 1937 and to permit advances of funds in connection with the customs' laws (Public Law No. 339).

II. BILLS DEFEATED TO JAN. 3, 1940

Medical Care for Personnel of Foreign Service

Among the several bills introduced to provide medical services to officers or employees of the foreign service and their dependents, one (H. R. 3537) passed the House and Senate and in due course reached the President for his approval. This bill provided that any duly appointed officer regularly serving abroad as a representative or employee of the United States foreign service who incurs illness or injury or who becomes physically disabled as a direct result of such service, not the result of vicious habits, intemperance or misconduct, shall be entitled to medical and surgical treatment and hospitalization by the United States Public Health Service. The bill further provided that any such officer or American employee suffering from illness or disability not the direct result of foreign service and any dependent member of the family of any such officer or American employee suffering from illness or disease when such dependent has resided with the officer or American employee on foreign station, the illness or disability not being the result of vicious habits, intemperance or misconduct, may be furnished medical and dental treatment and hospitalization by the United States Public Health Service at a cost to the officer or employee in accordance with rates established by regulations of the Surgeon General and applicable to pay patients from other branches of the government under similar circumstances. The President, however, returned the bill to the Congress without his approval. In doing so, he said, in part:

> This bill opens up a wholly new field of Government medical and dental care for Government servants. Up to the present, with a few minor exceptions, hospitalization and medical and dental care by the Government has been confined to the Army, Navy, and Coast Guard.
>
> I do not believe that the Congress wishes to start the practice of extending such assistance to a large class of civilian representatives and employees. There seems no reason why such facilities should be extended to officers and employees in the Foreign Service within the State Department without including all the other employees within the State Department. If this is done for the State Department it should logically be done for the employees of other departments.
>
> The estimate that it would cost only $21,000 per annum to extend these facilities to 1,600 officers and employees is absurd. With an average of three dependents for each one of them the total would run to about 6,500 individuals and the cost for this one branch of the Government alone would be excessive.
>
> Incidentally, to establish such a Government policy would, in a short time, involve setting up dispensaries and bed facilities in every place in the country where there are many employees of the Government. (House Doc. No. 431, 76th Congress.)

Exemption from Federal Food, Drug, and Cosmetic Act

The original Federal Food, Drug, and Cosmetic Act exempts from certain labeling requirements drugs dispensed on a written prescription signed by a physician, dentist or veterinarian, provided such drugs are not dispensed in the course of the business of dispensing drugs pursuant to diagnosis by mail. A bill was introduced (H. R. 5379) and favorably reported to the House of Representatives, proposing to include in such exemption coverage any drug dispensed by a physician or physicians "for the treatment of asthma or hay fever if such dispensing is in the course of the conduct of a business of dispensing such drug, which business shall have been conducted solely by physicians for at least twenty-five years immediately prior to June 25, 1939." No drug was mentioned by name, but the bill's phraseology so unmistakably pointed to the Dr. Nathan Tucker's Asthma Specific that one Representative was led to remark that it reminded him of another legislative proposal once made to the effect that "all officers of the Army now in the grade of colonel, who have served thirty years, ten of which were in the Philippines and five in Panama, and the rest in continental United

States, and whose hair is red and who have lost two front teeth, and who have been decorated for gallantry, shall, upon retirement, be promoted to be brigadier generals on the retired list." After being referred to as a "legislative monstrosity which should properly be laughed off the floor of the House," and as "one of the most extraordinary measures I have seen in a not very short membership in Congress," the bill was defeated in the House by a vote of 234 to 118.

III. BILLS PENDING, JAN. 3, 1940

Health Insurance; Disease Prevention

The President, on Jan. 23, 1939, sent a special message to Congress on health security with which he transmitted the Report and Recommendations on National Health, prepared by the Interdepartmental Committee to Coordinate Health and Welfare Activities (House Document No. 120). The details of the special message and report, which are now pending in the House Committee on Ways and Means, were discussed in THE JOURNAL Jan. 28, 1939, pages 330 and 333.

THE WAGNER BILL.—S. 1620, introduced by Senator Wagner, of New York, Feb. 28, 1939, is pending in the Senate Committee on Education and Labor. This bill purports to provide for the general welfare by enabling the several states to make more adequate provision for public health, prevention and control of disease, maternal and child health services, construction and maintenance of hospitals and health centers, care of the sick, disability insurance, and training of personnel. The Committee on Education and Labor held extensive hearings on the bill, from April 27 to July 13, 1939, at the conclusion of which a preliminary report was submitted to the Senate (Senate Report No. 1139) expressing approval of the general objectives sought by the bill but postponing any commitments on its details. From time to time there have been published in THE JOURNAL statements concerning the detailed provisions of the bill, concerning the hearings held on it, concerning the Preliminary Report of the Committee on Education and Labor and concerning the actions taken by the House of Delegates of the American Medical Association with respect to the proposed national health program.[2]

THE LODGE BILL.—Senator Lodge, of Massachusetts, on Aug. 4, 1939, introduced S. 2963 to add a new title to the Social Security Act providing for a system of health insurance to assist "qualified individuals to receive medical services when they require such care but are without means." A "qualified individual" is defined as one who has been registered as unemployed for at least fifteen consecutive weeks at a public employment office or other agency approved by the Social Security Board; is not receiving old-age benefits; before attaining the age of 65 has been paid, after Dec. 31, 1936, not less than $5,000 in total wages from an employment as defined in Section 210 (*b*) of the Social Security Act, and has filed (1) an application for health insurance benefits, (2) a bill for medical or hospital services rendered to him and (3) the sworn affidavit of the attending medical practitioner or of the medical supervisor of the hospital that such medical or hospital treatment was furnished. It is proposed that every qualified individual shall be entitled in any year, on approval of his application by the Social Security Board, "to have forwarded to the doctor or hospital furnishing him with medical or hospital services, in part or full payment, for such services a sum equal to all or to any part of the health-insurance benefit to which such individual is entitled for such year," such benefits to be equal to one fifth of 1 per cent of such individual's total wages, except that such benefits shall not be in excess of $25 for one year and the total of all such benefits shall not be in excess of $100. The bill further proposes that any doctor participating in any "false statement in connection with an application for benefits shall be reported by the Social Security Board to the state medical authority which issues and revokes licenses to practice medicine." The bill is pending in the Senate Committee on Finance.

THE CAPPER BILL.—Pending in the Senate Committee on Finance is another bill, S. 658, introduced by Senator Capper, of Kansas, Jan. 16, 1939, proposing "to aid in alleviating the loss caused by sickness." This bill proposes an annual federal appropriation of $200,000,000 to induce the states to develop and maintain adequate systems of health insurance. A federal Health Insurance Board is to be created, it is proposed, to administer the act; state plans must be submitted to this board and receive its approval. A state plan, to be acceptable, must provide for cash benefits to be paid employees for loss due to disability and for medical benefits for employees, their dependent spouses, their dependent children and other members of their family who are dependent on them and who live in the same household. Employees entitled to the medical benefits will be permitted to choose physicians from among a list of those who have agreed to render services under the health insurance plan.

CANCER.—Representative Rogers, of Massachusetts, introduced H. R. 4585, Feb. 28, 1939, proposing to amend the National Cancer Institute Act so as to authorize an additional appropriation of $2,300,000 for the fiscal year ending June 30, 1940, and for each fiscal year thereafter such sums as may be necessary, to assist the states, counties, cities or other political subdivisions to extend and improve measures through public and private institutions and organizations for the diagnosis, treatment and control of cancer, including the providing of hospital, diagnostic clinics and other facilities for the diagnosis and treatment of persons suffering from cancer or suspected of suffering from this disease. The bill is pending in the House Committee on Interstate and Foreign Commerce.

EPILEPSY.—A bill "To provide for, foster, and aid in coordinating research relating to epilepsy and other allied and nervous disorders" is the title of a bill introduced Feb. 23, 1939, by Senator Shipstead, of Minnesota, S. 1557. It is pending in the Senate Committee on Commerce. This bill proposes to create in the United States Public Health Service a National Epilepsy Institute to conduct researches, investigations, experiments and studies relating to the cause, diagnosis and treatment of epilepsy; to assist and foster similar research activities by other agencies, public and private, and to promote the coordination of all such researches and activities and the useful application of their results, with a view to the development and prompt widespread use of the most effective methods of prevention, diagnosis and treatment of epilepsy. This bill is modeled closely after the National Cancer Institute Act.

2. THE JOURNAL, April 23, 1938, p. 1372; Aug. 6, 1938, p. 540; Aug. 13, 1938, p. 631; Sept. 3, 1938, p. 936; Sept. 24, 1938, pp. 1188 and 1191; Oct. 22, 1938, p. 1570; Nov. 5, 1938, p. 1775; Jan. 28, 1939, p. 333; Feb. 4, 1939, p. 437; May 13, 1939, pp. 1969 and 1972; June 24, 1939, p. 2607; July 22, 1939, p. 337; Aug. 5, 1939, p. 512; Aug. 12, 1939, p. 597; Nov. 25, 1939, p. 1966.

TUBERCULOSIS.—Two bills were introduced by Senator Murray, of Montana, S. 471, pending in the Senate Committee on Commerce, and S. 2547, pending in the Senate Committee on Finance, proposing to aid the several states with respect to investigation, treatment and control of tuberculosis. The former bill proposes to authorize an initial appropriation of $5,000,000 and for each fiscal year for four consecutive years a sum "sufficient to carry out the purposes of this Act" to enable each state to make adequate provisions for hospital beds for tuberculous patients. The bill contemplates that the money to be appropriated shall be allotted by the United States Public Health Service to the states that submit approved plans. The latter bill proposes federal subsidies to assist states, counties, cities, health districts and other political subdivisions of the states to establish, extend and improve measures for the prevention, treatment and control of tuberculosis, including the provision of facilities for sanatoriums and other care for persons with tuberculosis. The United States Public Health Service will be authorized to make studies, investigations and demonstrations to develop more effective measures of prevention, treatment and control of the disease. For the fiscal year ending June 30, 1940, the bill proposes to authorize not exceeding the sum of $7,750,000, for the fiscal year ending June 30, 1941, not exceeding the sum of $33,500,000, for the fiscal year ending June 30, 1942, not exceeding the sum of $37,000,000, and for each fiscal year thereafter, such sum as may be necessary, provided that subsequent to the fiscal year 1945 the federal appropriations authorized shall not exceed $17,500,000.

PNEUMOCONIOSIS.—Pending in the Senate Committee on Education and Labor is a bill, S. 2256, introduced April 27, 1939, by Senator Murray, of Montana, proposing to promote, through the Department of Labor, the general welfare by enabling the several states to make more adequate provisions for compensation for the disability or death of workers from silicosis or other dust diseases. The bill proposes for each fiscal year a federal appropriation sufficient to carry out the purposes of the act, such sum to be allotted to the states which have submitted and had approved by the Secretary of Labor state compensation plans and prevention plans. Another bill, S. 2420, is pending in the Senate with a favorable report from the Senate Committee on Mines and Mining. It was introduced, May 16, 1939, by Senator Neely, of West Virginia, and proposes to authorize the Secretary of the Interior to cause to be made annual inspections and investigations in coal mines for the purpose of obtaining information relating to health and safety conditions, accidents and occupational diseases therein. H. R. 6352, introduced by Representative Keller, of Illinois, is a companion bill pending in the House Committee on Mines and Mining.

MEDICAL CARE FOR NONRESIDENTS.—Representative Voorhis, of California, has introduced two bills, H. R. 2974 and H. R. 2975, both pending in the House Committee on Ways and Means, proposing to amend the Social Security Act to provide aid to states in furnishing medical care to nonresident needy persons. The first bill proposes to authorize an appropriation of $7,000,000 annually to assist states, counties, health districts and other political subdivisions of states to provide medical care to nonresident needy persons on the same basis as to resident needy persons. The second bill proposes to authorize an initial appropriation of $10,000,000 and thereafter for each fiscal year a sum sufficient to carry out the purposes of the bill, to enable each state to furnish financial assistance, or other assistance, including, but not limited to, medical, dental and mental aid, to needy transients.

AID FOR THE BLIND.—S. 2215, introduced by Senator Davis, H. R. 5134 and H. R. 5272, introduced by Representative Dunn, and H. R. 5980, introduced by Representative Van Zandt, all of Pennsylvania, propose, in effect, to permit each state to place its own interpretation on the term "needy individuals who are blind" as used in the Social Security Act. The Senate bill is pending in the Senate Committee on Finance and the House bills in the House Committee on Ways and Means.

Pending also in the House Committee on Ways and Means is another bill, H. R. 5841, introduced by Representative Patrick, of Alabama, proposing to amend the Social Security Act by adding a new title thereto under which an appropriation of $1,000,000 will be authorized for the fiscal year ending July 1, 1940, and thereafter such sum as may be necessary to enable the states to aid in restoring sight to the blind by furnishing hospitalization and medical and surgical aid.

H. R. 5870, a bill introduced by Representative Angell, of Oregon, proposes to authorize such federal appropriations as may be necessary to enable the Social Security Board to pay an annuity at a rate not to exceed $50 a month to blind persons whose annual income from sources other than annuities payable under the act is less than $1,200. The term "blind person" is defined to mean a person who is 21 years of age or over and a citizen of the United States with not more than "20/20 [20/200?] of visual acuity" in the better eye with maximum correction or whose field of vision is limited to twenty degrees or less from the fixation point in all quadrants.

Two other bills, S. 2214, introduced by Senator Davis, and H. R. 5979, introduced by Representative Van Zandt, both of Pennsylvania, and pending, respectively, in the Senate Committee on Finance and in the House Committee on Ways and Means, propose to amend Title X of the Social Security Act providing for financial assistance to certain blind persons by adding a provision that the Social Security Board shall not disapprove any plan because it provides for financial assistance to blind persons having an annual cash income of not more than $1,200.

Pending in the Senate Committee on Education and Labor is S. 2802, introduced by Senator Sheppard, of Texas, proposing to amend an act authorizing the operation of stands in federal buildings by blind persons. Under the present law a blind person is defined to mean a person having not more than 10 per cent of visual acuity in the better eye with correction, the visual acuity to be certified by a duly licensed ophthalmologist. The pending bill proposes to define a blind person as a person having not more than 20/200 of visual acuity in the better eye with maximum correction or a person whose field of vision is limited to twenty degrees or less from the fixation point in all quadrants but eliminates the requirement that the blindness must be certified to by a duly licensed ophthalmologist.

AID TO PHYSICALLY DISABLED PERSONS.—Numerous bills are pending proposing to amend the Social Security Act so as to provide for the payment of benefits to persons who are physically handicapped to

such an extent that they are unable to engage in a gainful occupation. S. 1218, introduced by Senator Sheppard, Texas, is pending in the Senate Committee on Finance. S. 1265 and S. 2203, introduced by Senator Byrnes, South Carolina, are pending on the Senate Calendar with a favorable committee report. The following House bills are pending in the House Committee on Ways and Means: H. R. 42, introduced by Representative Fitzpatrick, of New York; H. R. 172, introduced by Representative Knutson, of Minnesota; H. R. 1960, introduced by Representative Izac, California; H. R. 2000, introduced by Representative Thomas, Texas; H. R. 2753, introduced by Representative Voorhis, California; H. R. 3999, introduced by Representative Whelchel, Georgia; H. R. 4035, introduced by Representative Beckworth, Texas; H. R. 5038, introduced by Representative Terry, Arkansas; H. R. 6394, introduced by Representative Angell, Oregon, and H. R. 6997, introduced by Representative Poague, Texas.

Another bill, H. R. 5736, introduced by Representative Voorhis, California, and pending in the House Committee on Ways and Means, proposes to amend the Social Security Act so as to enable the states to furnish financial assistance to needy persons who are not otherwise eligible under that act and for whom employment on public work projects financed in whole or in part by the federal government is not suitable or available.

Pending in the House Committee on Education are three bills, H. R. 1813, introduced by Representative Boland, Pennsylvania, and H. R. 6393 and H. R. 6553, introduced by Representative Angell, of Oregon, providing for the education of all children who are crippled, blind, partially seeing, deaf, hard of hearing, defective in speech, cardiopathic, tuberculous or otherwise physically handicapped and who for their education require an expenditure of money in excess of the cost of educating physically normal children. A similar bill, S. 795, introduced by Senator Pepper, Florida, is pending on the Senate Calendar with a favorable committee report.

United States Department of Health

Representative Pfeifer, New York, has introduced a bill, H. R. 4791, proposing to establish a federal Department of Health to be headed by a Secretary of Health appointed by the President from the medical profession, by and with the consent of the Senate. The bill provides that the Department of Health shall promote and maintain health and sanitation and for such purposes it will be authorized (1) to conduct research, experiments and surveys, formulate and foster plans and compile and disseminate information; (2) to perform such other functions relating thereto as shall be authorized by law, and (3) to cooperate with official agencies established by law in the several states and subdivisions thereof. There are to be transferred to the Department of Health, it is proposed, (*a*) the Food and Drug Administration; (*b*) the U. S. Bureau of Census, Division of Vital Statistics; (*c*) Freedman's Hospital and St. Elizabeth's Hospital; (*d*) the Children's Bureau, and (*e*) all functions of the Public Health Service, the Bureau of Narcotics and the District of Columbia Health Department. The bill is pending in the House Committee on Expenditures in the Executive Department.

Representative May, of Kentucky, proposes similarly that a Department of Public Health be created as an independent agency under the executive branch of the government by H. J. Res. 316, pending in the House Committee on Interstate and Foreign Commerce.

Veterans' Legislation

Except where otherwise indicated, all Senate bills proposing additional benefits for veterans or proposing to enlarge the class of beneficiaries are pending in the Senate Committee on Finance, the House bills in the House Committee on World War Veterans' Legislation.

SPANISH AMERICAN WAR VETERANS.—A bill, H. R. 2540, introduced by Representative Smith, of Washington, and pending in the House Committee on Pensions, provides that, for pension purposes, any person who served under contract with the War Department as acting assistant or contract surgeon during the Spanish American War shall be considered to have been in the active military service of the United States for the period of such contract service. Another bill, S. 259, introduced by Senator McNary, of Oregon, and pending in the Senate Committee on Pensions, proposes pensions for persons who served ninety days in foreign service under the jurisdiction of the Quartermaster General, Surgeon General, of the United States Army, the Secretary of the Navy, or Marine Corps during the Spanish American War.

Three pending bills propose pensions for male nurses who served under contract during the Spanish American War, S. 85, introduced by Senator White, of Maine, S. 1428, introduced by Senator Andrews, of Florida, and H. R. 5978, introduced by Representative Sheppard, of California. The Senate bills are pending in the Senate Committee on Pensions and the House bill in the House Committee on Pensions.

Pending in the House Committee on Pensions are three other bills proposing to extend the benefits accorded veterans of the Spanish American War (1) to contract veterinarians (H. R. 1834, introduced by Representative Colmer, Mississippi), (2) to certain persons who served in the Quartermaster Corps or under the jurisdiction of the Quartermaster General during the Spanish American War (H. R. 1008, introduced by Representative Welch, California), and (3) to any female trained nurse who served in Red Cross Auxiliary No. 3 in the Philippine Islands during the Spanish American War (H. R. 4530, introduced by Representative Buckley, New York).

A bill introduced by Senator Reynolds, North Carolina, S. 2107, and pending in the Senate Committee on Pensions, proposes to authorize a pension of $50 a month to all persons who served seventy days or more in the military or naval service of the United States during the Spanish American War who have reached the age of 65 years, including any woman who served honorably as a nurse, chief nurse or superintendent of the Nurse Corps under contract.

ADDITIONAL BENEFITS.—A bill, H. R. 2292, introduced by Representative Rankin, Mississippi, proposes to direct the Administrator of Veterans' Affairs to furnish outpatient pneumothorax therapy, insulin and liver extract to veterans requiring such treatment or medication, notwithstanding that the disease necessitating the treatment may not be directly or presumptively service-connected.

Another bill, H. R. 128, introduced by Representative Arends, Illinois, proposes to establish service origin presumptions for veterans of the World War suffering

from spastic paralysis, chronic arthritis, chronic rheumatism or chronic heart disease not the result of the veterans' own misconduct.

The supplying of prosthetic appliances for veterans suffering from nonservice-connected disabilities is proposed by H. R. 4639, introduced by Representative Rogers, of Massachusetts.

Representative Schafer, of Wisconsin, proposes in H. R. 6319, to authorize outpatient treatment for nonservice-connected disabilities of a World War veteran if such veteran has a 50 per cent disability or more directly incurred in or aggravated by service in the World War.

H. R. 2646, introduced by Representative Jarman, Alabama, provides that any veteran shown to have active pulmonary tuberculosis of a compensable degree shall be deemed to be totally disabled for purposes of compensation when hospitalized. Another bill, H. R. 6249, introduced by Representative Reece, Tennessee, provides that any ex-service man shown to have had tuberculosis of a compensable degree shall, under certain conditions, receive not less than $100 a month for the remainder of his life.

Three bills are pending providing for the furnishing of medical or hospital care for veterans residing outside the continental limits of the United States, H. R. 2650, introduced by Representative Rogers, Massachusetts, and H. R. 2988 and H. R. 6586, introduced by Representative Schwert, of New York.

H. R. 802, introduced by Representative Jenkins, Ohio, provides that where an honorably discharged veteran suffers or has suffered an injury or contracted a disease and an emergency develops requiring immediate hospitalization on account of such injury or disease, and no veterans' facility is feasibly available and delay would be hazardous, the Administrator of Veterans' Affairs shall be authorized to pay the reasonable value of such service received from persons other than the Veterans' Administration.

Representative Voorhis, of California, has introduced a bill (H. R. 6450) providing that wherever a veteran seeking a service connection for a disability is shown to have been engaged in combat with the enemy or to have been subjected to other conditions within the zone of advance which can, in good medical judgment, be considered as causing or aggravating the disability, it shall be considered to have been caused or aggravated by military service.

Also pending are three bills proposing, in effect, to reenact all laws conferring benefits on veterans that were repealed by the Economy Act of March 20, 1933, H. R. 31, introduced by Representative Cannon, Missouri, H. R. 1985, introduced by Representative Robsion, Kentucky, and H. R. 2986, introduced by Representative Johnson, Indiana.

Representative May, of Kentucky, has introduced a bill (H. R. 2425) providing that in no event shall any person by reason of wilful misconduct be denied any of the service-connected benefits of the veterans' laws provided such misconduct did not interfere during service with full performance of military or naval duty.

NEW BENEFICIARIES.—S. 2543, introduced by Senator Neely, of West Virginia, proposes to accord all the benefits now given to veterans of the World War to persons who served as members of boards to carry out the provisions of the Selective Draft Act. The bill is pending in the Senate Committee on Military Affairs.

Pending in the House Committee on Military Affairs is H. R. 4634, introduced by Representative Carter, California, providing that citizens of the United States who during the World War enlisted as and served in the status of civilian employees of the Signal Corps of the United States Army, American Expeditionary Forces, shall be considered as having served in the military service of the United States.

Honorably discharged veterans of the Moro and Pulajane wars or campaigns, or other campaigns which took place in the Philippine Islands between the dates of July 5, 1902, and Aug. 5, 1913, inclusive, are to be accorded the same privileges of hospitalization and medical care and treatment accorded to honorably discharged veterans of other wars, if H. R. 6800, introduced by Representative Zimmerman, of Missouri, is enacted. The bill is pending in the House Committee on Pensions.

Senator Reynolds, of North Carolina, proposes in S. 2304, pending in the Senate Committee on Military Affairs, that all hospital facilities under the control and jurisdiction of the Veterans' Administration shall be available for any insane person who has served in the Regular Army, Navy or Marine Corps of the United States for ninety days or more, not dishonorably discharged, irrespective of the cause of such insanity.

Veterans who served on the Mexican Border as members of the Regular Army or National Guardsmen between June 1916 and April 1917, and who received honorable discharges, will, under the provisions of H. R. 5026, introduced by Representative Reece, Tennessee, be given the benefits of all acts conferring compensation and hospital benefits on veterans of the World War.

Representative Buckler, Minnesota, in a bill he introduced, by request, H. R. 3115, proposes to confer the status of veterans of the World War on persons enlisted and serving on United States Shipping Board vessels in war zones during the World War. The bill is pending in the House Committee on Naval Affairs.

Three bills are pending providing that any person who served in the military or naval forces of the United States during a recognized campaign or expedition, and who was honorably separated from such service, shall be granted hospitalization and domiciliary care by the Veterans' Administration subject to the same restrictions and limitations as are now applicable to World War Veterans, H. R. 2725, introduced, by request, by Representative Rankin, of Mississippi, H. R. 5657, introduced by Representative Sheppard, of California, and H. R. 2877, introduced by Representative Van Zandt, of Pennsylvania.

NEW HOSPITAL FACILITIES.—In addition to the proposals embodied in H. R. 7243, discussed later on in this survey under the division "Miscellaneous Bills," twenty-seven bills are pending proposing to construct new hospitals for veterans or to enlarge existing facilities. The types of hospital accommodations proposed and the location thereof, the number of new beds contemplated and the amounts of federal money to be appropriated by these bills are set forth in the accompanying table.

Pollution of Navigable Waters

Sixteen bills were introduced to provide federal aid in the control of water pollution. One of these bills, S. 685, introduced by Senator Barkley, of Kentucky, passed the Senate May 1, 1939, and was subsequently reported to the House of Representatives by the House

Committee on Rivers and Harbors, with the recommendation that it pass. In view of the status of this bill, it is assumed that action on any of the other fifteen bills is improbable. S. 685 proposes to create in the United States Public Health Service a Division of Water Pollution Control. As explained by the Senate Committee on Commerce in its report on the bill, the general tenor of the legislation is to the effect that the division so created shall encourage cooperative activities by the several states for the prevention and abatement of water pollution and to bring about the enactment of uniform state laws relating to water pollution. Provision is made for compacts between the

Proposed Hospitals for Veterans

Bill No.	Sponsor	Place of Hospital	Beds	Type	Appropriation
H. R. 38	Dowell, Iowa	Des Moines, Iowa	300	General (addition)	$400,000
H. R. 77	Maas, Minnesota	Fort Snelling, Minn.	350	General (addition)	425,000
H. R. 129	Arends, Illinois	Dwight, Ill.	175	General (addition)	787,500
H. R. 304	Bradley, Pennsylvania	Philadelphia area	800	General (new)	2,500,000
H. R. 809	Rogers, Massachusetts	At or near Boston	*	General (new)	1,400,000
H. R. 891	Murdock, Arizona	Tucson, Ariz.	250	General (addition)	500,000
H. R. 1800	Maloney, Louisiana	New Orleans or adjacent thereto	300	General (new)	1,300,000
H. R. 1945	Allen, Louisiana	Alexandria, La.	200	General and neuropsychiatric (addition)	450,000
H. R. 2003	Van Zandt, Pennsylvania	In area of Blair, Centre and Clearfield counties, Pa.	800	General (new)	2,500,000
S. 627	Lodge, Massachusetts	At or near Boston	*	General (new)	1,400,000
H. R. 2746	Pace, Georgia	Southwest section of Georgia	800	General (new)	2,500,000
H. R. 2979	Van Zandt, Pennsylvania	Central Pennsylvania area	800	General (new)	2,500,000
H. R. 3137	Spence, Kentucky	Lexington, Ky.	146	General (addition)	250,000
H. R. 3330	Maas, Minnesota	Fort Snelling, Minn.	700	General (addition)	650,000
H. R. 3333	Sheppard, California	Mojave Desert, San Bernardino or Riverside Co., Calif.	200	"Primarily for treatment of diseases of the chest" (new)	500,000
H. R. 3602	Youngdahl, Minnesota	Fort Snelling, Minn.	700	General (addition)	650,000
H. R. 3644	Bradley, Michigan	In or near Gladstone, Mich.	150	General (new)	700,000
H. R. 3941	Havenner, California	Fort Miley, Calif.	124	General (addition)	600,000
H. R. 4091	Risk, Rhode Island	Rhode Island	400	Neuropsychiatric (new)	1,000,000
H. R. 4198	McCormack, Massachusetts	In or near Boston	800	General (new)	2,400,000
H. R. 4481	Tenerowicz, Michigan	Dearborn, Mich.	270	General (addition)	250,000
H. R. 5284	Merritt, New York	Whitehall, N. Y.	600	General (new)	1,875,000
S. 2257	Gurney, South Dakota	First Congressional District of South Dakota	*	General (new)	1,000,000
H. R. 6041	Hendricks, Florida	On or near the central east coast of Florida	700	General (new)	1,750,000
H. R. 6377	Mundt, South Dakota	First Congressional District of South Dakota	*	General (new)	1,000,000
H. R. 7165	Lea, California	Northwestern California	300	General (new)	1,300,000
H. R. 7550	Mundt, South Dakota	First Congressional District of South Dakota	*	General (new)	1,000,000

* Not stated.

several states in the interest of abating water pollution. Any state, municipality, or other public body which is discharging untreated or inadequately treated sewage or waste into navigable waters or their tributaries is declared under the provisions of the bill to be eligible for federal aid in the form of grants-in-aid or loans for construction of necessary treatment works, in accordance with plans approved by the respective state health authorities and the Surgeon General. A board of five commissioned engineer officers of the Public Health Service is proposed to be established in the division to serve without additional compensation. This board is to submit to the Surgeon General recommendations as to the desirability of commencing, continuing or extending all projects for treatment works on which reports are desired and for which applications have been made for grants-in-aid and loans. The report of the Senate Committee continues:

> The theory of the legislation is that our navigable waters are primarily under the jurisdiction of the Federal Government and that waste and sewage in the tributaries to them necessarily fall within the Federal control. The legislation is founded upon the conviction that the time has come in the growth of the country as a whole, and especially in view of the concentration of population in cities and towns, when active steps must be taken to preserve and provide abundant pure water for drinking purposes and other purposes, and also in the interests of the health of the people living along the streams, and further in the interest of propagation of fish, not for the sake of sportsmen so much as a means of food supply. Manifestly, the purpose of the legislation is to provide a reasonable and limited amount of federal aid to induce States, cities, and towns, and also persons, to provide suitable sewage- and waste-disposal plants rather than to divert such sewage and waste into the streams from which a large portion of the population obtains its drinking water and which under suitable conditions might be made a source of better health and also the means of producing a more abundant food supply. (S. Report No. 120.)

U. S. Medical College

Representative May, of Kentucky, proposes, in H. R. 2423 and in H. J. Res. 316, both pending in the House Committee on Interstate and Foreign Commerce, to establish a United States postgraduate medical and surgical college and research institute to provide properly trained medical, surgical and health personnel for the military, naval and public health services and to coordinate and improve health research activities of the federal government. The college, it is proposed, will be located in the District of Columbia and graduates of accredited medical and surgical colleges may be admitted to the institution for training for army, navy or public health work on designation by Senators and Representatives in Congress. The institution is to be authorized to provide medical, surgical and clinical facilities for the diagnosis and treatment of all types

of illness and physical and mental disabilities. Such facilities are to be available to all patients of any age, but no patient may be admitted whose income is in excess of $1,000 a year except in police cases and in cases of emergency arising from accidents. All medical, surgical and public health research activities conducted by or under the jurisdiction of the federal government with respect to foods, drugs, alcoholic liquors, maternal and child welfare and medicine and surgery are to be under the jurisdiction of the board of regents of the institution.

District of Columbia

Except as otherwise indicated, all Senate and House bills relating to the District of Columbia are pending respectively in the Senate and House Committees on the District of Columbia.

Representative Lemke, of North Dakota, proposes by H. R. 73 to prohibit the making of any form of vaccination or inoculation a condition precedent to admission to any public or private school or college, or the exercise and enjoyment of any right or privilege, in the District of Columbia.

Two bills provide for the reorganization of the local government in the District of Columbia: S. 2776, introduced by Senator King, Utah, and H. R. 7095, introduced by Representative Kennedy, Maryland. Among other things, these bills propose to transfer to a Department of Personnel the functions now exercised by the Commission on Licensure to Practice the Healing Art and by such examining boards as exist by appointment of that commission, including the Board of Examiners in the Basic Sciences and the Board of Examiners in Medicine and Osteopathy.

Two bills are pending proposing to amend the code of the District of Columbia to provide for the organization and regulation of cooperative associations: H. R. 4312, introduced by Representative Hull, of Wisconsin, and S. 2013, introduced by Senator Capper, of Kansas. The purpose of these bills is apparently to legalize the corporate practice of medicine in the District. They provide, in part, "In the case of an association formed hereunder which arranges the rendering to its members, of licensed professional services on a non-profit basis, said association shall not be subject to the insurance laws, shall not be construed as being in violation of any rule against corporate practice of professions, or in violation of statutes regulating licensure of professions."

Two other bills, S. 2066, introduced by Senator Reynolds, North Carolina, and H. R. 3808, introduced by Representative Reece, Tennessee, propose to provide for the use of scientific tests to determine the degree of intoxication of operators of motor vehicles in the District of Columbia whose vehicle causes personal injury or substantial damage to any other vehicle or property.

The Commission on Licensure to Practice the Healing Art in the District of Columbia would be authorized to issue a license to practice naturopathy to Edward F. Grillo, by the provisions of H. R. 4569, introduced by Representative Shanley, Connecticut. Another bill, H. R. 7024, introduced by Representative Martin J. Kennedy, New York, proposes to authorize the Commission to issue a license to practice the healing art in the District of Columbia to Dr. Marcel P. Kahn.

The enactment of a new podiatry act for the District of Columbia is contemplated by H. R. 6194, introduced by Representative Bates, of Kentucky. Under the terms of the bill any person is to be regarded as practicing podiatry "who is a manager, proprietor, operator, or conductor of a place for performing podiatry operations, podiatric surgery, or who, gratuitously or for a salary, fee, money, or other compensation paid either to himself or to any other person, directly or indirectly, furnishes or advertises to furnish, podiatry service, or performs or causes to be performed by any other person, agent, or employee podiatric operations of any kind, diagnosis or professes to diagnose, prescribe for or treats or professes to treat disease, pain, deformity, deficiency, injury, or physical condition of human feet or adjacent structures."

Two bills were introduced proposing to regulate the practice of optometry in the District of Columbia, H. R. 278, introduced by Representative Smith, of Virginia, and H. R. 5238, introduced by Representative Nichols, of Oklahoma. The latter bill has been reported to the House of Representatives, with the recommendation that it pass. The reported bill proposes to define optometry "as the measurement and correction of refractive and muscular errors of the eye by any method not including the use of drugs and not including surgical procedures such as cutting or actual manipulation of the eyeball, but including the use of optical appliances for diagnosis or correction of such refractive and muscular errors."

H. R. 5221, introduced by Representative Bolles, Wisconsin, provides that retired members of the police and fire departments of the District of Columbia shall receive such medical or surgical services, medicines and hospitalization for illnesses or disabilities reasonably calculated to be the outgrowth of injuries received or diseases contracted in line of previous active duty.

Miscellaneous Bills

H. J. Res. 316, introduced by Representative May, and pending in the House Committee on Interstate and Foreign Commerce, in addition to proposing the establishment of a U. S. medical and surgical college and a national department of health as previously referred to in this survey, also contains a provision proposing to make it unlawful for any person to use any seal, stamp or certificate of another person denoting or implying superiority in purity, quality, usefulness or effectiveness of any drug, food, cosmetic, therapeutic lotion, therapeutic device or diagnostic and surgical assists unless authorized by rules and regulations to be promulgated by the United States Public Health Service.

Pending in the House Committee on Interstate and Foreign Commerce is another House joint resolution, H. J. Res. 103, introduced by Representative Coffee, Washington, providing for a survey by the United States Public Health Service of the conditions in the United States with respect to the importation, production, distribution and use of narcotics. The resolution contemplates that the Surgeon General of the Public Health Service shall make a report to Congress and recommend legislation.

Representative O'Day, of New York, proposes in H. R. 101, pending in the House Committee on Ways and Means, to amend the Social Security Act so as to include under its unemployment and old age provisions employees in nonprofit organizations.

Four bills are pending to permit federal income taxpayers to deduct in connection with their income tax certain amounts paid during the taxable year for dental,

surgical or nursing treatment or hospitalization. S. 2093 and S. 2140, introduced by Senator Bone, Washington, are pending in the Senate Committee on Finance and H. R. 4747 and H. R. 4779, introduced by Representative Tenerowicz, of Michigan, are pending in the House Committee on Ways and Means.

Five bills are pending proposing recognition for services performed in the interest of public health. H. R. 2223, introduced by Representative Connery, Massachusetts, proposes to recognize the high public service rendered by soldiers who volunteered and served in trench fever experiments in the American Expeditionary Forces. The bill is pending in the House Committee on Military Affairs. Another bill, also pending in the same committee, H. R. 5874, introduced by Representative McKeough, Illinois, proposes to include the name of Gustaf E. Lambert among those honored by an act recognizing the high public service rendered by Major Walter Reed and those associated with him in the discovery of the cause and means of transmission of yellow fever. S. J. Res. 107, introduced by Senator Sheppard, Texas, and which has passed the Senate and is pending in the House Committee on Military Affairs, proposes to authorize the President to award a gold medal to Dr. Anita Newcomb McGee "in recognition of her splendid service to the United States in organizing a corps of trained nurses for the United States Army during the period of the Spanish American War and the Philippine Insurrection." Another bill that has passed the Senate and has been reported to the House with recommendation that it pass is S. 1582, introduced, by request, by Senator Bulow, South Dakota, proposing to authorize the President to bestow a meritorious service medal on any civil officer or employee of the United States, including commissioned officers of the United States Public Health Service and of the Coast and Geodetic Survey, for the performance of an outstanding act of service involving great physical bravery or heroism, or for the performance of a service to the government or to humanity characterized by exceptional merit and involving a high degree of labor or effort above and beyond ordinary and usual requirements of his office. Pending in the House Committee on Patents is H. J. Res. 162, introduced by Representative Sirovich, of New York, proposing to establish an annual award in each of the fields of literature, music, art, drama, journalism, medicine, chemistry, physics and mathematics to be known as "Distinguished Service Medal in Arts and Sciences."

Two bills are pending proposing to authorize the President to appoint for temporary service in the Navy 100 acting assistant surgeons, who shall have the rank and compensation of assistant surgeons. The Senate bill, S. 2284, has passed the Senate and is pending in the House Committee on Naval Affairs along with a House bill, H. R. 5884, introduced by Representative Vinson, of Georgia.

Representative Bloom, of New York, proposes by H. R. 4421 and H. R. 4422 to establish a chiropody corps, respectively, in the medical departments of the Navy and Army. The first bill is pending in the House Committee on Naval Affairs and the second in the House Committee on Military Affairs. Another bill pending in the House Committee on Military Affairs is H. R. 4934, introduced by Representative May, of Kentucky, by request, proposing to authorize the appointment of female dietitians and female physical therapy and female occupational therapy aides in the Medical Department of the Army; a companion bill is pending in the Senate Committee on Military Affairs, S. 1615, introduced by Senator Sheppard, of Texas.

A bill introduced by Representative Knutson, Minnesota, and pending in the House Committee on Ways and Means, H. R. 6068, provides that on all ethyl alcohol withdrawn and used for other than beverage purposes the tax shall be $1.10 a gallon.

Senator Wagner, of New York, proposes in S. 1964 to authorize national banking associations to contribute to community funds, or to charitable, philanthropic or benevolent instrumentalities conducive to public welfare such sums as their boards of directors may deem expedient and in the interests of the association. This bill has passed the Senate and is pending in the House Committee on Banking and Currency along with a companion bill, H. R. 5763, introduced by Representative Barry, New York.

The provisions of the United States Employees' Compensation Act would be extended to cover (1) all civil officers of the United States, by S. 1416, introduced, by request, by Senator Ashurst, of Arizona, which has passed the Senate and is pending in the House Committee on the Judiciary; and (2) enrollees in the Civilian Conservation Corps suffering disability or death resulting from injury while in the performance of duty, by S. 569, introduced by Senator Hatch, New Mexico, and pending in the Senate Committee on Claims. Provisions of the Longshoremen's and Harbor Workers' Compensation Act would be extended to bowmen and raft men employed in lumbering operations on navigable waters by S. 2134, introduced by Senator Schwellenbach, Washington, and H. R. 5727, introduced by Representative Coffee, Washington, pending, respectively, in the Senate and House Committees on the Judiciary. S. 835, introduced by Senator Wheeler, of Montana, proposes to provide compensation for disability or death resulting from injury to employees of contractors on public buildings and public works. This bill has passed the Senate and is pending in the House Committee on the Judiciary. Another bill, S. 2862, introduced by Senator Wagner, of New York, proposes to provide compensation for disability or death resulting from injury to employees of interstate carriers. This bill is pending in the Senate Committee on Interstate Commerce.

Hospitalization and, in some instances, medical services would be supplied (1) to the wives and dependent children of officers and employees of the Lighthouse Service by S. 2226, introduced by Senator Sheppard, Texas, and pending in the Senate Committee on Commerce; (2) to members of the National Guard, Officers' Reserve Corps and Enlisted Reserve Corps who are injured or become ill while on active duty under proper orders in time of peace by H. R. 4685, introduced, by request, by Representative May, of Kentucky, and pending in the House Committee on Military Affairs; (3) to persons aboard or operating any vessel in fishing operations by H. R. 3141, introduced by Delegate Dimond, Alaska, and pending in the House Committee on Merchant Marine and Fisheries; (4) to certain employees in the Bureau of Marine Inspection and Navigation of the Department of Commerce and to licensed local pilots of the United States by H. R. 902, introduced by Representative Smith, of Washington, and pending in the House

Committee on Merchant Marine and Fisheries, and by S. 1007, introduced by Senator Bone, of Washington, and pending in the Senate Committee on Commerce; (5) to retired enlisted men of the Army, Navy, Marine Corps and Coast Guard, under certain conditions by S. 1461, introduced by Senator Sheppard, of Texas, and pending in the Senate Committee on Military Affairs, and by H. R. 2893, introduced by Representative Izac, of California, and pending in the House Committee on Military Affairs, and (6) to retired personnel of the Army, Navy, Marine Corps, Coast Guard and Fleet Naval and Fleet Marine Corps Reserves by S. 1460, introduced by Senator Sheppard, of Texas, and pending in the Senate Committee on Military Affairs, and by H. R. 2892, introduced by Representative Izac, of California, and pending in the House Committee on Military Affairs.

A surgeon and ship hospital will be required on every steamer of the United States or of any foreign country navigating the ocean a.d licensed to carry more than twenty-five passengers that leaves or attempts to leave any port of the United States, except steamers between ports of the United States less than 500 miles apart if a pending bill is enacted, H. R. 2404, introduced by Representative Sirovich, New York, and pending in the House Committee on Merchant Marines and Fisheries.

H. R. 4923, introduced by Representative Geyer, California, and pending in the House Committee on the Judiciary, provides for the forfeiture and seizure of matter sent through the mails relating to contraception, abortion or matter designed, adapted or intended for any indecent or immoral use.

The retirement of nurses, attendants or orderlies in any neuropsychiatric hospital or ward in any hospital operated by the government of the United States after the completion of twenty-five years of service is proposed by H. R. 3055, introduced by Representative Randolph, West Virginia, and pending in the House Committee on Civil Service.

Representative Gross, of Pennsylvania, proposes by H. R. 6576, pending in the House Committee on Agriculture, to authorize the Secretary of Agriculture, in the interests of the public health and as a relief to the dairy industry of the country, to prepare and cause to be published a series of articles and advertisements promoting the consumption of milk and dairy products. S. 168, introduced by Senator Nye, of North Dakota, and pending in the Senate Committee on Finance, and H. R. 4311, introduced by Representative Gearheart, of California, and pending in the House Committee on Ways and Means, propose to prohibit the importation of dairy products produced from milk or cream other than from cows either accredited free of bovine tuberculosis or under test for bovine tuberculosis. A similar bill, H. R. 5475, pending in the House Committee on Ways and Means, was introduced by Representative Gehrmann, Wisconsin.

H. R. 6652, introduced by Representative Boren, Oklahoma, authorizes the Secretary of Commerce, through the National Bureau of Standards, to establish and publish standards of quality for consumer goods, excepting food, drugs, cosmetics and other articles for which federal standards are now provided by law, when in his judgment such standards are in the interest of public health.

The imposition of an additional tax of 10 cents a pound on oleomargarine is contemplated by H. R. 245, introduced by Representative Culkin, New York, and pending in the House Committee on Agriculture. Another bill, introduced by the same author and pending in the same committee, H. R. 246, proposes to prohibit not only the importation and interstate transportation but also the manufacture, sale, offering for sale or possession for sale of (1) any oleomargarine, margarine, butterine or other substitutes for butter manufactured from any fat other than that of milk or cream, and (2) any milk or cream or substitute therefor which contains any fat or oil other than that of milk.

Four bills are pending in the House Committee on the Merchant Marine and Fisheries proposing to construct a marine hospital in Florida: H. R. 3700, introduced by Representative Peterson, H. R. 3578, introduced by Representative Cannon, and H. R. 2985 and H. R. 4427, introduced by Representative Green, all of Florida. Four other bills have been introduced by California Representatives to construct a marine hospital in California: H. R. 3214, introduced by Representative Geyer, H. R. 5577, introduced by Representative Izac, and H. R. 6983, introduced by Representative Welch, all pending in the House Committee on Merchant Marine and Fisheries, and H. R. 6558, introduced by Representative Geyer and pending in the House Committee on Naval Affairs.

The construction of a hospital for the insane of Alaska is proposed by another bill, H. R. 2963, introduced by Delegate Dimond, Alaska, and pending in the House Committee on Territories.

Another pending bill, H. R. 7243, introduced by Representative Starnes, Alabama, proposes to make appropriations for public works projects. It provides that not to exceed $50,000,000 shall be allotted to federal agencies for such projects, to include specifically projects for hospital and domiciliary facilities of the Veterans' Administration and projects for hospitals, quarantine and laboratory facilities under the Public Health Service. Other funds are to be utilized, it is proposed, in making loans or grants to public agencies and to nonprofit corporations for the construction, improvement or extension of hospital facilities, for sewage treatment or disposal plants and for the elimination of pollution in streams. The bill is pending in the House Committee on Appropriations. S. J. Res. 169, introduced by Senator Smith, South Carolina, proposes to direct the Commissioner of Public Works, out of any funds available to the Public Works Administration, to pay to certain named hospitals specified amounts as federal grants "representing 30 per centum of the cost of the self liquidating projects heretofore undertaken by such hospitals with money loaned by the Federal Emergency Administration of Public Works." Among the hospitals so named are the Allegheny General Hospital, Pittsburgh; Community Hospital Association, Battle Creek, Mich.; Frances Mahon Deaconess Hospital, Glasgow, Mont.; Franklin Square Hospital, Baltimore; Greene County General Hospital, Waynesburg, Pa.; Huron Road Hospital, East Cleveland, Ohio; Jewish Memorial Hospital, New York; McLeod Infirmary, Florence, S. C.; Public Health Association, Tulsa, Okla.; Robert Packer Hospital, Sayre, Pa., and Weymouth Hospital, South Weymouth, Mass. This joint resolution is pending in the Senate Committee on Appropriations.

ANNUAL CONFERENCE OF SECRETARIES OF CONSTITUENT STATE MEDICAL ASSOCIATIONS

Held in the American Medical Association Building, Chicago, Nov. 17-18, 1939

(Concluded from page 61)

SATURDAY, NOVEMBER 18

Rural Medical Service

DR. F. S. CROCKETT, Lafayette, Ind.: Three or four years ago the Associated Women of the American Farm Bureau began to pass resolutions annually calling for better health, better medical care and better hospitalization for rural America. Through the offer of the full facilities of the American Medical Association and a promise of sympathetic consideration on the part of our organization, they reversed a radical resolution and adopted one calling for further study of the whole subject of what could be done by the medical profession and by the farmers themselves. Now these women and their husbands, who form the American Farm Bureau, some 400,000 or more in number, are not asking for government aid in the sense that they expect the government to give them medical care. They have never, so I have been assured, passed any resolution endorsing any form of governmental medicine. They are interested, however, in paying for medicine, for good medical care, and having it arranged, if possible, in line with their ability to pay for that service. In certain ways they have some complaints. I know that in my own community there is still some survival of the old horse and buggy method of charging $1 a mile to the farmer who, if he lives out 10 or 15 miles, is called on to pay exorbitant fees, which makes it absolutely impossible for him to have many calls on the sick members of his family. That isn't a custom that would stand out as the broad usage but, after all, it occurs often enough for it to become something of a bone of contention with them, a thing which makes them feel a certain injury, and rather justly so. I think we have talked enough about it in our own state of Indiana to have some feeling on the part of doctors that there should be some correction, and the thing hasn't been fully decided, although it should be considered on a time consumed basis, as well as service rendered.

In taking this up I have received considerable encouragement from the national organization of the Farm Bureau at its headquarters in Chicago at a conference of its national leaders in Columbus, Ohio, at a midwestern conference of the presidents and state officers of farm bureaus in the middle-central group of states, all of whom have received this discussion as it has grown with considerable assurances to me that they think we are on the right track. However, I am not so sure that the thing is far enough along for action or, after all, just what the farmers themselves will think about it. Many state and national officers will agree to something because it is fine or the intent is good, but the people who are involved in it personally may lack some of that enthusiasm, not care for it, or feel it doesn't meet the problem. For that reason I went to the township and county farm bureaus around my own home community and got some very interesting material.

John Dewey's statement that social advance in a democracy is largely dependent on a high moral concept of the worth or value of the individual epitomizes the urge that prompts our planning for better medical care.

Indigence for those who want to work can hardly be called a problem in rural areas, since the opportunity for obtaining food is everywhere at hand. Intelligent self interest and thrift are no more universal in the country than elsewhere, so that those who, while able to feed, clothe and shelter their families find it difficult to meet the cost of any catastrophe, form a considerable percentage of our farm population. It is this group that would benefit most, but any plan to improve the general level of health in rural America would have to include larger groups, embracing also many in comfortable circumstances. There should be no objection to this inclusion of the well-to-do if in the planning it is not contemplated to ask a reduction in the currently recognized fee schedule of the medical profession.

In dealing with unpredictable risks such as sickness, it is necessary to invoke the principle of insurance. The most recent interesting experience has been with voluntary group hospitalization. This type of policy charges a definite sum of money and in return gives a certain amount of service.

Increasing popularity has been accorded this effort to spread the costs of hospitalization, as is evidenced by its appearance in many of the larger cities in many states, while a number of other states are contemplating legislation permitting this form of insurance, mentioned repeatedly yesterday. The benefits offered by the various plans have varied somewhat in detail but they all give a certain limited number of days of hospital care, usually from twenty-one to thirty days. The subscriber is entitled to a bed at the $4.50 or higher rate mentioned, while certain charges usually appearing on the hospital bill as extras are given without extra charge. These extras are most often laboratory, operating room and x-ray diagnosis. The premium varies from $9 to $12 annually. This rate is based on the actuarial expectation that the hospital use will average one day a year for the individual member. This adds up to an expected subscriber cost of $6, for which $9 is charged, the difference being used for administration and the creation of a reserve fund.

In many of these plans the members of a subscriber's family are entitled to benefits through payment of additional dues or on the basis of a percentage reduction in rates. With an annual rate of $9 per member, the wife is included at $16.20 and for a family of any size $21. These rates are made on the condition of collection by the employer through deduction from the payroll.

The expense of sickness and accident has been the object of numerous plans. Certain consumer groups have employed physicians, commercial companies have put out cash indemnity contracts, county and state medical societies have formulated plans for low income groups, all of which have had some measure of success. No plan seems applicable to all groups so far as their special needs are concerned. Too often the contract is notable for its exceptions rather than its benefits. As a physician, and having intimate experience with the problem, I have often seen the subscriber disappointed. Many commercial companies seem to warrant the criticism that their contracts are administered for the benefit of the company rather than the so-called beneficiary.

In contradiction to this commercial attitude, any plan we formulate should have in mind the sole purpose of giving "better medical care to Rural America" through the most liberal benefits possible for the price charged. The benefits must be in the form of cash indemnity for all or part of the expense incurred. This would preserve the patient's right to select his own physician, a very important element in good doctoring.

The plans of commercial companies covering sickness and accident differ in many details but all seek to indemnify the subscriber in part or in full for the expense of sickness. One of the best most recently proposed contracts divides the liability into four parts and charges for each as follows: 1. Hospital at 60 cents (men) and 70 cents (women) per month (from $7.20 to $8.40 annually, $4.50 per day bed). 2. Surgical operations limited as per attached schedules. Very low fees. Fifty cents (men) to 60 cents (women) monthly (from $6 to $7.20 annually). 3. Medical care at $2 per call for limited number; from 60 cents (men) to 70 cents (women) monthly (from $7.20 to $8.40 annually). 4. Special nurse at an additional rate. It is stated that these rates are possible only if members can be handled in groups and dues collected without expense to the company. Counting up these services that must be included in our plan, the dues charged by this company would add up to $1.70 a month for men ($20.40 annually) and $2 a month for women ($24 annually). These rates are cheap if one suffers illness of any magnitude but are a fairly heavy drain on the average pocket book, especially when no illness is experienced. Where the premium for such protection exceeds a nominal amount, such as one might gamble on any chance-taking proposition, the urge to take the negative side of the gamble and bet that one will not need it actually dominates one's action. That is, when the cost requires some planning and saving, one usually decides not to take the insurance.

Any plan for better health for rural America should include medical and surgical as well as hospital expense provisions, provided through nominal dues. It is recognized that this is a difficult problem to solve.

The farming community forms a class able to meet its day to day expenses. The expense incident to ordinary illness seldom proves a hardship for these people to meet. My own experience would tend to prove that bills not exceeding $100 are met with fair promptness, while bills of $50 or less are often paid on the spot. General discussion with farmers, covering the point at which debts become a burden, supports this observation. What then should be the thought, the philosophy, guiding the formulation of our plan?

1. We should aim to improve the level of rural health by observing several principles in the formulation of our policy:

A. An annual health examination should be provided for all over 50 years of age and an initial examination for all subscribing members.

B. The cost of any one illness and any one hospitalization during the membership year should be limited to the subscriber.

C. The benefits accruing should be as liberal as possible, having in mind the amount of dues paid. We are taking advantage of the fact that we are dealing with a limited group having a common economy. For instance:

(*a*) Benefits should include inducements for better obstetric care by greater use of the hospitals.

(*b*) It should encourage members to make use of curative measures rather than through exceptions, which make it difficult. Physical conditions discovered by the examination should be promptly corrected.

(*c*) It should include quarantinable diseases for the protection of the family.

(*d*) It should permit the treatment of present diseases under some plan such as the payment in advance of several years' dues or some other equitable provision.

(*e*) The social value of facilitating the cure of venereal diseases under some provision requiring quarantine should be given consideration from the standpoint of family and community protection.

D. The subscriber should have selection of his own physician and his preference of hospitals.

E. Cooperation of county medical societies must be obtained along with their agreement to abide by the local fee schedule. This would protect the premium pool from exorbitant charges, which might be made in some instances when it is learned that the fee is to be paid from insurance.

F. Each county farm bureau should cooperate to secure members and collect dues and transmit them to the management without cost.

G. No one should be refused a second or subsequent membership solely on account of ill health, though some provision for the protection of the premium pool would have to be made.

H. Prevention of chiseling by a few doctors should be provided through a grievance committee appointed by the county medical society to review questioned charges, and chiseling of members should be guarded against through a comparable committee appointed by the local farm bureau. Some such plan would afford protection against misuse of the premium pool.

I. A reserve fund should be created as early as possible.

J. An executive organization should be created to administer the plan. This should include the compilation of statistics on which future policies could be based.

2. The annual dues should be of a nominal size. They should not exceed an amount the majority of farmers could gamble and lose without a sense of money loss or self denial.

3. The policy of administration must be liberal. The motive must be to encourage members to seek correction of their disabilities.

My earlier plan undertook to indemnify the subscriber for expense up to a certain limit for doctor bills and hospital costs. This is the usual pattern. It seemed necessary that each service should be written as a separate risk; doctor bills in one policy, hospital bills in another. The difficulty of possible overuse where wage loss did not enter as a deterrent factor made this liability difficult to estimate. A plan of this kind could afford only limited coverage at an annual charge of $10 for medical expense and another $10 for hospitalization.

I have discussed the general principles involved as outlined, at a number of township farm bureau meetings in my own community. There seemed to be agreement that some form of protection would be desirable. It was evident, however, that the costs required by an all inclusive protection would be too large to be attractive to most farmers. From $20 to $25 a year for each member for both medical and hospital coverage seemed rather high, and it became even more difficult when other members of the family were included. The demand was for something that would give assurance against bills becoming too large: some plan that would limit the expense of any one illness to a level not too difficult to pay and afford protection against heavy expenses that come from major illnesses.

Turning to insurance in other fields for inspiration, I was impressed with some of the plans covering automobile risks. You are all familiar with the coverage of damage to the car. If one wants the company to make good every scratch and dent, it can be had at rather a high premium. If one will absorb the first $50 expense incident to any damage, the premium is very small; yet the protection against heavy loss is provided for.

The principle of limiting one's liability for damage incident to any general type of accident or illness has been incorporated in a medical and hospital policy. It is proposed that, if the subscriber will pay a certain first part of any doctor bill and another certain first part of any hospital bill, the remainder of the expense can be met by the insurance group at a very nominal premium. The amount of dues naturally determines both the relative amount of the subscriber's limited liability and the extent of the benefits bestowed.

At present $10 seems the favorite size for dues, so I will discuss what could be done with this amount of money. With $10 dues setting the limit of the premium pool from which must be paid the expenses of administration, the creation of a reserve and the benefits, I have tried to meet the requirements mentioned earlier.

It has seemed important to many of us that an annual health examination should be included in the benefits. Its cost may vary within wide limits. It would be financially impossible with the suggested dues to pay for extensive services. The type of life insurance examination deemed adequate for the purpose by well established insurance companies would seem adequate for this kind of health audit and could be given subscribers at a cost of $3. It would seem advisable that all new members should have such an examination and the report filed in the home office. For those 50 years or older it might be well to reexamine at yearly intervals. No policy I have read contains this provision. Far reaching benefits should accrue to the members from this unique privilege through the early discovery of incipient disease. This alone would do much for better health for rural America. Some inducement should be included to encourage the greater use of hospital facilities for expectant mothers, with its greater safety for both mother and child.

The inclusion of several features having great social values that are excluded in present forms of group plans, such as the care of venereal disease under quarantine and the use of hospitalization for the diagnosis of tuberculosis and mental disorders, would add something to the item of liability. Their value in promoting a higher degree of rural health should make their inclusion highly desirable.

Discussion of these problems with farmers has been instructive. While divergent views have been expressed, the impression now prevails that the subscriber should absorb the first $50 of any medical or surgical expense and the first $25 of any hospital expense. This would limit the cost of any major catastrophe to $75, with dues at only $10. The desirability or necessity of placing any limit to the liability of the group has not been determined, but it is my hope to pay all expense above the $50 and $25 mentioned; but this would have to be guided by future experience. It would be advisable to put in some limit in order to protect the fund. The possibility of some lower rate where large families are concerned is under consideration and can be solved only with further study.

In summary, it is proposed that we achieve better health for rural America by the organization of a mutual nonprofit plan

the provisions of which would be written to meet the needs of the farmers. The right of the subscriber to his own choice of physician and preference as to hospital must be maintained. It should provide a health examination for every one, and for those over 50 this should be repeated at frequent intervals. It should be so written that the subscriber is encouraged to keep in good health and where need exists to have the condition corrected. It should not be just another insurance plan. It should be written and administered with the object of improving the general level of rural health. The dues should be kept at a nominal size and to do this the subscriber should carry a portion of the risk. Remuneration for the physician and hospital should be on the basis of recognized fee schedules for doctors and maintenance costs for hospitals.

DISCUSSION

MR. J. G. CROWNHART, Wisconsin: I was much impressed with Dr. Crockett's work, because I have known of the work he has done with rural groups. I doubt that many of us appreciate what far reaching effect that has had with my own state in smoothing out an understanding, if I may put it that way, that medicine is interested in the problem of those who live in rural areas and not exclusively with those who are employed in large industry. It seemed to me that Dr. Crockett brought out clearly in his paper the major difficulty that arises in these plans, with the desire of the physician on the one hand and the asking—if I may put it that way—of the rural groups along the same field that the service be broadened and, on the other hand, the financial difficulties they have when the premium is high. It seemed to me that it would be proper, in connection with Dr. Crockett's general subject, to bring out the fact that one unit of our government has gone far in this whole problem of serving rural families. I refer to what is now known as the Farm Security Administration. The Farm Security Administration has adopted the principle of voluntary sickness insurance. It is not on a cash basis but, as in so many voluntary plans, the physician becomes the real insurer. We had some interesting experiences suggesting to the Farm Security Administration in Wisconsin that, recognizing that your clients are in a low income group, after you have made this loan you establish the percentage that should be taken from the minimum fee schedule and then just assure us that whatever that percentage is the physician will receive it. I can assure you that the Farm Security Administration was not at all interested in that plan. The physician must be the insurer of the plan. Dr. West suggested yesterday that in these various plans their experimental nature has perhaps not been emphasized sufficiently before the public. I think it fair to say that the program of the Farm Security Administration in dealing with rural groups is not an experimental thought in its mind except as to the final plan it will put before the country. I have here a compilation of its figures. It serves 60,000 families now in more than twenty-four states and in more than 200 counties. It refers to the plan as the report of the development of the Farm Security Administration, medical care program. I was impressed in all the contacts we have had with the Farm Security Administration that a great many of its clients are in no different financial circumstances after they have once received the loan than the vast majority of the people living in the same county in that rural situation. Once we enter on a plan to accept this principle I have no doubt at all that the demand, should it be made, would be extended to all other people in similar circumstances. I question how we can explain that it is really given to those who borrowed money from the government but to no one else. I think we sometimes are of the opinion that, because the man has a loan, he is in the public assistance group. Let me assure you that, as we have checked some of these families in Wisconsin, we find that, while they may borrow from the government and that may be the only source of their income at the time they needed the money, with a favorable crop condition last year all these clients were in just the average condition of all farmers in that particular county. It seems to me that the plans of the Farm Security Administration need to have real consideration when we discuss a subject as broad as rural service.

DR. HOLMAN TAYLOR, Texas: We must remember that while the Farm Security Administration client does borrow money from the federal government he does so because he has been selected by the federal government as a guinea pig on which to work out an experiment. The primary purpose of that service is to take the farmer, teach him how to set up his farm, how to run his farm, how to buy what he needs and how to determine what he needs, how to sell his crop, and how to use the money and take care of all these resources, whatever they may be. That is the primary purpose of that service. These farmers are in a special class. They are people who the government believes can be rehabilitated and, with a minimum or perhaps maximum of effort, taught to make a living for themselves and their dependents on the farm. The fact that they need to keep well while they are doing this was slow to dawn on those in authority, I believe, and it was some time after this service was inaugurated before the farmer was permitted to borrow money with which to pay for medical care. Every dime this farmer borrows is earmarked for some purpose, $130 for a mule, $30 for a cow, so much for this, so much for that, and so much for medical service. The bone of contention has been the relative amounts involved, and particularly medical service. In our section of the country it has been determined that the financial or economic status of the farmer would enable him to borrow from $10 to $15 or $20 a year with which to pay for medical service. An effort to determine how much of this money is ordinarily used by the farmer in his yearly conduct was not very productive, because they are coming under a new regimen, coming under new conditions now, and are going to be taught to live so that they won't get sick. That makes an entirely different setup from that which the physician faces when he contemplates service for the farmer, as in rural Texas. When it was put up to the State Medical Association of Texas to determine whether the doctors of Texas could be permitted—if that is the proper word—to participate in this enterprise, we went into the matter rather thoroughly. We made an agreement that the matter should be put up to the county medical societies and locally the doctors would determine whether they would enter the plan or not. We set a few bounds. We insisted that the percentage of money a farmer could borrow for medical service should be raised, to which the authorities assented. Then we provided that there should be no pooling of funds. The only opposition our Council on Medical Economics had to the pooling of funds was the fact that it would set up a pattern for the organization of cooperative groups, and sickness insurance for the purpose of providing sickness benefits. Subsequent to the time we made this contract, the House of Delegates of the American Medical Association decided that such groups would be within the bounds of medical ethics. They have pooled the money all over Texas, and it has worked out beautifully everywhere except in one place, where there is one enterprising physician on the payroll at the cost of the other physicians. Where there has been proper regard for the relative values of things, there has been no question that it will work out, even on the narrow margin of from $10 or $15 to $20 a year per farmer. The system followed is to pay off once each month, taking one twelfth of the money set up and paying it out in accordance with the regular bills turned in by the doctors who have served these people. If there is any surplus money after that has been done it goes over into the national fund, but where there is a deficiency the doctors take a cut on their bills.

DR. H. H. SHOULDERS, Tennessee: Dr. Taylor, would you answer a question? What are the limits of services under the plan in Texas?

DR. TAYLOR: Under the plan in Texas you serve the family for the year, regardless of what it costs.

DR. SHOULDERS: Is it complete service, hospital and all, or just home calls?

DR. TAYLOR: I believe there is excluded the usual venereal diseases and catastrophic situations.

DR. SHOULDERS: Are hospital expenses paid?

DR. TAYLOR: No. The Farm Security Administration has access to a fund which can be used in limited amounts to pay for catastrophic illnesses and for hospital service and extraordinary service that is not contemplated in the setup.

DR. SHOULDERS: With reference to the pooling of funds, is that done by counties?

DR. TAYLOR: It is done by counties too, but not always. The Farm Security Administration has districts. Sometimes those districts cover two or three counties, or portions of some counties and portions of others.

DR. SHOULDERS: In the event of a prolonged illness, the one person who has the loan, would he be paid out of the common fund? Some doctor who looks after him, will he be paid out of the common fund for his services?

DR. TAYLOR: Not for the catastrophic illnesses. I understand there is a fund from which they can get that money. As I understand it still further, in some sections of the country this fund to which I refer has been added to the pool to start with. That has not been done in Texas.

DR. MORRIS FISHBEIN: I believe the question discussed by Dr. Crockett is probably more important than many of the other points that have been considered, simply because of the fact that the farm group is of special political importance. Those agencies in the government that are seeking to bring about fundamental changes in the nature of medical practice are aiming particularly at the farm group. Dr. Crockett has done a fine piece of work in endeavoring to develop a plan that would apply specifically to the farmer and which would keep the medical care of the rural group in the United States out of the hands of the politicians. The Farm Security Administration plan was introduced first in North Dakota and failed first in North Dakota. Other states have come along one by one. If we had endeavored to make our decision as to the Farm Security Administration's work wholly on the basis of North Dakota, there never would have been another state to try it. It is quite conceivable, as Dr. Taylor says, that in Texas it has been fairly successful, but it is also quite understandable, as Mr. Crownhart has emphasized, that in this plan the doctor is the real insurer. In other words, wherever the plan fails, it is the doctor who makes even. It is the adjustment of the doctor's fee which permits the plan to function.

This plan has been sold to the medical profession of the country. Agents of the Farm Security Administration have circulated freely among the various counties of the United States and, in speaking to county medical societies, have served as salesmen for the plan. In few counties indeed have there been any opposition salesmen selling any other plan or endeavoring to show the faults which lie in the government plan. Occasionally in certain counties—this happened, I believe, in one county in Colorado—the physicians took the trouble to appoint two men to find out everything that could possibly go wrong with the plan in that particular area. Those two men made a special study of the matter over a considerable period of time. Then when the government agents appeared to sell the plan they found that there were a lot of questions to be asked which they had difficulty in answering in that particular area. The plan was not adopted with the enthusiasm with which it was greeted in other areas where the government salesmen had entirely their own way in projecting this to the doctors of the county. Again I would say that whenever such an offer comes up from any sort of an agency it is important to have men who have made a special study there to discuss the matter with the government. If the doctor is going to be the insurer the doctor will frequently find, as insurance companies sometimes find, that he is the one who holds the bag when everything conspires to make things go wrong. All of us know that, whenever a new insurance plan is put into effect for any group, innumerable diseases are discovered which have not been apparent up to that time or which have been considered as of little or no importance. It is remarkable how many hernias come to light whenever a new plan is suddenly inaugurated. Hernias appear with which their owners have lived comfortably and indeed enjoyably up to that time but which on that particular occasion assume a new importance. It is important to find out how much you can get safely for so much money. That approach to the problem made by Dr. Crockett and his group I consider fundamental from an economic point of view. Find out how much the family can actually put up, or your person who is to be insured can actually spend, and find out from various agencies what they are capable of giving for that amount of money.

When the many plans were brought up here yesterday afternoon, one distinguished gentleman from Iowa made the statement that "the boys are just passing the ball around"; they haven't started to play yet. Really, that is a vital observation. We are experimenting. We are trying out a lot of new plans. They seem marvelous before the game starts, but when the game starts you suddenly find blockers appearing out of nowhere to bring all sorts of new situations that you have not contemplated. Therefore, whenever a plan like the Farm Security Administration plan is set up in one state, that is no reason why forty-seven other states should immediately adopt that plan. The idea of the first two visits being deductible always appealed to me as a great idea, exactly as in motor car insurance you have the first $10 or the first $25 or the first $50 deductible. But everybody knows there are men who endeavor to take advantage of insurance companies. I don't believe any one has yet worked out a way to stop chiseling under a deductible plan, even motor car deductible plans; with human beings it is still more difficult. Unless you can give complete insurance easily, however, you are going to have to introduce the deductible feature. That can be introduced on the basis of the first two visits deductible, the first $10 deductible or the first $50 and $25, as Dr. Crockett suggested, or you can make your money fit the situation more definitely by delimiting certain diseases or certain surgical conditions which will not be included in the plan. When you take off for these conditions you will find you can also reduce your premium. Perhaps that is a safer way to reduce the premium than to endeavor to work out what constitutes the first two visits. The people in Washington will tell you that if you set up a plan and immediately the workers who have been losing eight days a year from illness begin losing fourteen days from illness, it is a good thing. It means, they say, that these workers are now being taken care of where formerly they were neglected. They say that if the man who has been making on the average four visits a year to a physician now begins making twenty-four visits a year to a physician, it is a good thing because it means that the diseases which he formerly neglected are now being cared for. We ought to inquire carefully as to the ultimate effect on the people of encouraging workers who have lost eight days a year from their work because of illness to begin losing twelve or sixteen days a year because of illness. We must inquire whether or not the cultivation of that attitude, in which every small ache, pain or disturbance of one kind or another constitutes a reason for hospitalization simply because somebody else is paying for it is a good thing for the nation. The experience of the Associated Hospitals Plan in New York, with great numbers of people taking vacations at the expense of the insurance company, should be a warning to others that this possibility exists ready to break down any plan, unless you guard against the possibility when it first comes up.

DR. TAYLOR, Texas: May I make a correction, please? Dr. Anderson thinks I am in error in stating that hospital fees and fees for catastrophic illnesses are not included. Anyhow, hospital fees are not taken from this regional pool. It is my recollection, however, that the hospital service is promised up to a certain amount but that that money comes from some place else. I may add to my discussion, if you will permit me to do so, that probably more than 50 per cent of the county societies to whom this proposition has been put up have turned it down in Texas.

DR. A. T. MCCORMACK, Kentucky: I want to ask Dr. Crockett what his observation has been with regard to one aspect of this problem. Sixty-three per cent of our hospitals are in three cities. The Farm Bureau had a conference the other day with the Community Hospital Association in Louisville, seeking to secure for the farm bureau of the state, who compose the most successful and leading and most influential farmers of Kentucky, hospital care on a premium basis. Assuming that they purchase that hospital care, naturally they will come to the places where there are hospitals in order to get the care. They will have to. There are no vacant beds in their communities, and they have to come to Louisville, Lexington or Covington in order to secure the beds. They are the only people who pay their doctors' bills in the country now. We are having great difficulty in keeping rural physicians practicing at the present time. They are all concentrating in the cities. If we are going to bring all of the patients, who pay their bills through any insurance plan, into the city to the hospital, how are we going to keep the country doctors at all for the emer-

gency cases that are going to happen in the country? We also have this difficulty: In twenty-five counties in Kentucky, 40 per cent or more of all deliveries are made by midwives, utterly ignorant midwives, none of whom deliver more than five women a year. There are but eight midwives in the state who deliver more than ten women a year. They just chaperon, sit around and do very little good to a woman who is having a baby by herself. They pick the baby up and that is about all. With that sort of thing happening, of course the question of insurance does not appeal to those people at all. We have ten or twelve counties in which the family income is less than $75 a year of spendable money. Of course, they are not going to buy anything. That is perfectly apparent. That is the other end of the problem. I am not sure which is the most dangerous, the Washington plan, which is working apparently successfully in most of its units, or the nebulous plans in most of the other states that are rather dreamy and sketchy and do not seem to be working at all yet. I am against compulsory health insurance, and I do not want to put in any shoe horn which seems to tend to lead us in that direction. People are demanding increased hospitalization for everything. We know that the facilities in which to practice medicine must be provided in the areas in which they are needed. In the meantime, what are we going to do in Tennessee, Mississippi or Alabama, where the hospital facilities are all concentrated in a few cities? What are we going to do with the rural population if we are going to bring people to town when they are sick?

DR. SHOULDERS: I arise to endorse the statement and to express an anxiety too concerning one made by Mr. Crownhart, and that is the danger of a certain sampling of the population.

DR. MCCORMACK: Will you let me say that in Kentucky no county society has accepted the Farm Security Administration proposition? It is tempting because it offers you cash, but it does not offer you any cash that you cannot get along without.

DR. SHOULDERS: Some counties in Tennessee did. There were 4,000 families the Farm Security Administration had determined were qualified to obtain the loan. As a matter of fact, those families in the main were families which owned a farm and, in their attempts at unnecessary expansion, lost it. They were productive people, far more capable people than most of the tenant class, or others below. I should say they were a superior group. The Farm Security Administration then selected the best. They were selecting them as risks on the basis of a loan. They were just barely unable to obtain a bank loan. The danger is that they are going to take a superior element of the population and, from an experience with that group, determine what the experience should be with a group much lower.

DR. TAYLOR: The Farm Security Administration turns these clients back into regular channels as soon as they demonstrate their ability to make a living.

DR. SHOULDERS: It contemplates doing it; I don't think it has ever done it. No tenant in Tennessee has ever obtained a loan unless he once owned a farm or showed that he was once that capable. He is really a good risk from the standpoint of a loan.

DR. GEORGE H. KRESS, California: The medical care of the agricultural and rural population in California is a big problem, not only from the standpoint of the large number of agricultural workers who own or operate farms and ranches, but because of that other large group of migrant workers referred to in Steinbeck's "Grapes of Wrath." As Dr. Crockett has pointed out, some of the organized agricultural groups in certain parts of the United States are not kindly disposed to the medical profession. In California we learned that to our sorrow last year, but by meeting in friendly conference, the seeming misunderstanding was overcome. The Council of the California Medical Association, consisting of some twenty-one physicians, put in an entire day with the farmer groups, going over the problems of medical care in rural districts, as the farmers and ranchers understood them. This was important, because all parties knew that a proposed compulsory health law would be submitted, with endorsement by the state's governor, at the legislature which would convene in January 1939. Through the voluntary medical service organization known as the California Physicians' Service, a nonprofit corporation organized for statewide medical service, under the sponsorship of the California Medical Association, it was possible to secure the cooperation of the agricultural groups. The attempt to pass the compulsory health act in this year's legislature resulted in failure, but the proponents of the compulsory health plans are still very active and are carrying on a well organized publicity campaign in promotion of their aims.

The migrant or itinerant farmer or rancher problem in California is based on the fact that each year a floating population of more than 250,000 persons comes into the state from the South and West, hoping to earn their living through work in the fields and orchards. To help meet the issues arising, the Farm Security Administration came into California and formed a new nonprofit corporation, the "Agricultural Workers Health and Medical Association," consisting of representatives of the Farm Security Administration, the board of health, the California Medical Association and others, to make up a board of seven directors. The government made an initial loan of $100,000 to this corporation to get it started, and this corporation in turn made contracts with the hospitals in the various districts to supply hospitalization services. A fee table was established for members of the medical profession. This organization was a new departure on the part of the federal government, and it is the testimony that, to date, it has done its work efficiently and in harmonious cooperation with other state agencies, such as the board of health. The service plan intended to supply the medical needs of citizens belonging to the lower bracket income groups of California (which was brought into being by the California Medical Association through action at a special meeting of the California Medical Association house of delegates in December 1938) began its corporate existence in February 1939 as the California Physicians' Service, with headquarters offices in the Mills Building in San Francisco. It is working in cooperation with the three nonprofit hospital organizations in California, which are under the supervision of the insurance commissioner. The statewide scope of this medical service and hospitalization plan that is working under the sponsorship of a state medical association necessitated careful attention to a host of details, so that initial progress seemed slow to some. However, the California Medical Association had had its lesson on hasty action in the California Medical-Economic Survey, in which more than $50,000 of its reserve funds had been spent for little purpose, seemingly, other than to bring out, under the supervision of a doctor of philosophy-director, facts regarding illness quite well established through previous investigations. In the California Physicians' Service each physician, as a professional member, paid a registration fee of $5. Of the 6,000 members of the California Medical Association, almost 5,000 have registered. Professional membership is not limited, however, to members of the California Medical Association. These registration fees provided $25,000 for initial work, and the California Medical Association lent the new corporation $15,000 in addition. The California Medical Association, having embarked on this enterprise, is determined to see it well established, even though the initial financial costs are heavy. An additional $10,000 loan has been authorized. Slowly perhaps, but firmly, the California Physicians' Service is making a place for itself, in spite of the stiff opposition of commercial insurance companies. The official journal of the California Medical Association, *California and Western Medicine*, prints each month bulletins in which the progress of California Physicians' Service is outlined. Every effort is being made to promote its interests, and that on a sound actuarial foundation.

All signs point to the placement of a compulsory health initiative on the state election ballot of November 1940. Before that time, California Physicians' Service should be functioning so well that the voters of the state will have received their answer to the question "Where can we secure health and sickness protection, in a sound organization that uses the pre-payment principle and permits the patient to choose his own physician, and to secure the best possible type of medical service and care?" For the present, California Physicians' Service offers no medical service to individual signers. The smallest group to be covered must contain at least five individuals. Two types of coverage are offered, one at $2 a month and the other at $2.50 a month. If the beneficiary member, that is, the subscribing or patient member, is willing to pay for the first two visits, the charge for

the medical service and hospitalization is $2 a month. If the beneficiary member does not want this type of service, the coverage costs $2.50 a month. I think that is a much wiser plan than asking people in very moderate circumstances to pay from $25 to $50 a month as a sort of preliminary entrance or enrolment fee, because when it comes to selling this type of insurance the lay persons whom we are trying to help do not have much money. However, they may be willing to come in on a two dollar a month charge. It is amazing how many persons are willing to save fifty cents a month who, without such a stipulation in the contract, might become pests not only to one but to a number of physicians on the panel, as well as to themselves.

As already stated, it is the hope of the California Medical Association to see the nonprofit, statewide, voluntary medical and hospitalization service that is operating now under the name California Physicians' Service so well under way during the next several months that the citizens of California will prefer its evident advantages to any bureaucratic compulsory plan that may be proposed for placement on the law books of the state.

DR. R. B. ANDERSON, Texas: I should like Dr. Crockett, in closing his discussion, to make clear whether or not this deductibility feature of $50 for medical service and $25 for hospitalization, or vice versa, as it may be, must be paid by the person holding such a policy before he can get the benefit of any medical service. That was not clear to me. I should also like him to say whether or not this proposed plan is limited to farm groups, and also whether it is available to individual families or individual persons. Those two things were not plain. I don't believe Dr. Taylor wanted to convey the impression that Texas is sold, hook, line and sinker, on any Farm Security Administration. They have made a determined drive down there, because Texas adjoins states in which they think they have operated successfully. Despite their determined drive in Texas, I don't believe there are over seventeen county medical societies that have been willing to experiment with it. I have had the pleasure of being present at some of their selling operations, and they have a good deal of difficulty in selling these doctors out there. These things they do they are going into with their eyes open, and also with consideration of the dangers it may be leading into, as pointed out by Mr. Crownhart.

DR. C. C. NESSELRODE, Kansas City, Kan.: We have tried for many years to be good to Texas. We lent them Brinkley. They used to poke fun at us and tell us what they would do to us, so we have sent him down. We think we are a little ahead of them on the Farm Security Administration. It is $30 a year up in Kansas, instead of $15 a year per family, and it is left entirely to the county societies. For instance, if they say "We don't care what you do with this money, whether you just treat emergencies," all they insist on in the county societies is that they treat emergencies. It is the serious, unexpected emergency that this money is supposed to take care of. A good many of the counties, however, or some of the counties have said "We know we have to take care of the emergencies anyway, so we will just take it all for the $30." In the contract that is used as the standard contract in the state, it is recited in the contract that this is an experiment and that it is experimental in its nature. I have been much impressed with the paper that has just been read and it seems to me we are missing the point a bit in this discussion. If I understand the Indiana plan, the doctor is working with the Farm Bureau, and it is the Farm Bureau's plan. I happened to be the chairman of the Cancer Committee for the state of Kansas for a great many years, and we have tried to carry on our plan of popular education to the public through the medical societies, and invariably, when we came to the platform, the public thought we had something to sell them. In the last few years the women's clubs have taken it up. It is the women's clubs program, and all we are doing is helping in supplying the program. They are asking for meetings now, where it used to be that we couldn't force the meeting on them. If the Farm Bureau will take this matter up as a part of its health program, if it does the promoting and does the proposing under the leadership as proposed here, it seems to me that we are going a long way toward settling the farm problem. I appreciate the point Mr. Crownhart made that if we aren't careful this Farm Security Administration program will set the pattern and will have decided the future of medicine. I think it is far better that we get behind this program over here, which appears to me to be the intelligent approach. The public is taking it up. The public is promoting it and we are helping and we are going along with the public. It is a new approach, but it seems to me to be a most excellent approach. I should like to join with Dr. Taylor in saying that I hope reprints of this paper will be made available in a short time, because this Farm Security program is being urged in all the counties of Kansas on a county unit basis. It points to the mistakes made up in North Dakota. The administration says it tried to administer the program on a statewide plan up there and it broke down because of that, and that it will succeed on a local basis. I should like further to recommend to you that you put into your contract that it is experimental. Misunderstandings will arise, and the farmer will say he didn't know it was experimental, although it is recited in the contract. It is a bit of protection for us. But the one recommendation that appeals to me is this program originating with the Farm Bureau. It is coming from the people, and we are helping them and going along with them, and that is the sanest piece of advice on the settlement of rural medicine I have heard at any time.

DR. F. S. CROCKETT: I am appreciative of the generous discussion that has been given my paper. I am grateful that not many questions have been asked. I will start with Dr. McCormack's questions. I am familiar with the fact that your Farm Bureau is just now trying to inaugurate a group hospitalization plan, and I have been in correspondence with its state secretary, Mr. Kilgore. He has been listening to this plan and he thinks it is a good one, but he feels that if he can sell his people on the hospital part the rest of it will be much easier. After all, I left the lower economic group that is taken care of by the federal government through the Farm Security Administration clear out of this because, after all, they are in the same situation, practically, as any other indigent group where they haven't the money to finance anything. The government lends the farmers this money but, after all, it is more or less of an appropriation. They don't necessarily get it back. Consequently we don't expect them to have the $10 necessary to finance such a plan or the $50 or $25 or the $15 and $25, whatever the level would be. The whole thing hooks down on to the fact that the economic feature is tied up with the amount paid, the amount the individual assumes of his first expense, a psychologic hurdle which is necessary in the promotion of any scheme to see that it is not overused. In asking about the first price assumed by the member of such a plan, it could be made anywhere of course, as you know, but if you make it local you will have to put a ceiling on what you are able to pay for through your premium pool. The idea was to make it just as high a ceiling on what the medical costs would be in any catastrophe. The idea was not to pay for ordinary calls and ordinary services. These people are able to handle that themselves. They are an economic group that can meet and do meet their ordinary expenses. It is the extraordinary expenses that get them down, $150, $200 and so on. If we can give them a plan costing, say, $10, which any of them might lose without feeling they had lost anything of great value, and yet protect them against excessive costs, perhaps we have solved a certain thing, that is, the effect of catastrophe. That is all they have been complaining about, the catastrophic expenses of illness and hospitalization. There has never been any complaint about the ordinary $2 office call, and so on. That is what we have laid out a plan to meet, and the ceiling of cost to the individual per year can be made anything that suits the group.

"What's in a Name"

DR. ROBERT HOFFMAN, South Bend, Ind.: World events have demonstrated that wisely chosen propaganda constantly outmaneuvers diplomacy. Trustworthy friends of medicine constantly remind us that organized medicine blunders in opposing "socialized medicine." They avow that left wing movements, compensating with money or services the underprivileges due to poverty, have developed a momentum that cannot be blocked at this time. They declare that our attempts to forestall this so-called social progress irritates the public more than it clarifies medicine's aims.

Every one familiar with the publicly announced plans of Thurman Arnold, of the Department of Justice, or the rulings of the National Labor Relations Board or the "surveys" of the

United States Public Health Service knows that this point of view warrants our serious consideration. Why not abandon the term "socialized medicine" and rechristen it "political medicine." That term catapults the burden of convincing the public back into the laps of state and federal agencies. It implies to the public that physicians object to the present movements not for selfish reasons but because they fear that any possible good vested in such movements would be nullified by political patronage, much after the fashion of parole systems, liquor control and the like, which the public holds in contempt.

Meeting Legislative Problems

MR. THOMAS A. HENDRICKS, Indiana: Facing a crisis is nothing new to any medical organization. However, modes and methods in meeting a legislative crisis have changed, and if the medical profession is to maintain its influence and properly present its side of the story to Congress and to the state legislatures it must adapt itself to these new conditions and to these new situations, and use these new methods just as an army must employ the modern technic of mechanized warfare if it hopes to succeed these days.

Of course the scope of the subject assigned staggers a fellow, as it covers the waterfront, not to mention the continent from Cape Cod to Catalina Island, with all the divergence and varying shades of opinions and diagnoses—and I'm terribly afraid I haven't anything new to offer in the way of help or suggestions. In fact, I've given up trying to offer help or suggestions after what happened at the time of the flood two years ago.

WHAT WE NEED MOST

Having lost contact with the communities and the doctors along the Ohio River, the executive committee of the Indiana State Medical Association sent me down there to offer the services of the profession to the medical brethren in the emergency. The first town in the flooded area I visited was Leavenworth, Ind., where one doctor, Dr. H. H. Deen, was located. All was under water except the church spire, but Dr. Deen was seated at the water's edge, on the side of his car, with saddle-bags over his knees, giving "running board" treatment and first aid to his patients, who formed a line, each waiting his turn. I dropped in at the end of the line, worked my way up to the doctor and said earnestly "On behalf of the officers and the 4,000 members of the medical profession of Indiana, is there anything you want, Doctor, anything in the world you need?" Dr. Deen looked up, gave me a thorough once-over and answered: "Young man, what we need most down here is a damn good lettin' alone." Dr. Deen perhaps expressed the sentiment of most of the medical profession today, but whether we like it or not the medical profession is spotlighted in the public eye and interest is centered on all medical organizations today as never before. Hence it is up to each county and state society to face the klieg lights without stage fright, in full confidence, and continue to play better than ever before its traditional role of rendering the highest standard of medical service possible to the public.

So without spending too much time in reviewing the rapidly changing national and local medical legislative picture and without discussing in detail in this short time any of the various and sundry situations confronting the profession in Washington or in the states, all of which have been treated adequately in your state and American Medical Association journals, let me emphasize some things that should be kept in mind in placing your case before the public and in presenting your side of the argument to your legislators.

HOW NOT TO DO IT

Mistakes in approach and methods are often so costly that I will list these points, of course with due apologies to Dale Carnegie, under the heading "How not to make laws and influence legislators."

1. Don't go before the legislature divided. It is always a great tragedy when the medical profession goes into an open conference divided. The great tragedy of the National Health Conference was that it was stacked and rigged to make it appear in the press and to the American public that a great schism existed in the medical profession.

2. Don't send a telegram or [redacted] to your Congressman or legislator saying "This bill is vicious" or "Vote against this insidious measure." Instead of emotionalism, take the time to make your criticism constructive. One well written, well thought out, letter is worth tons of "canned" protests and petitions.

It is interesting to follow the rise and fall of the Gannett technic in this respect. You all recall that when the reorganization bill was before Congress Frank Gannett gained the reputation of inventing a new and most effective method of influencing Congress—that is, flooding the congressmen's mail with letters, telegrams, post cards of protest. And it worked. Hence it was thought that if you could get enough people to write enough letters, send enough telegrams protesting against a measure, the measure was doomed. So the opponents of the neutrality repeal bill at the recent special session thought that if they used the same method they could accomplish the same results—that is, the defeat of the proposed legislation. Although more communications were sent to Washington against the neutrality repeal legislation than ever in the history of Congress, it was passed. All of which leads us to the belief that the quantity of the mail is not half so important as the quality, and the number of letters is not half so important as whose name is signed to the letters.

In Indiana we follow the Neal system (devised, expounded and effectively worked for years by Dr. John R. Neal, chairman of the legislative committee of the Illinois State Medical Society). The Neal system is based on the theory that, all things being equal, no one has as much influence on a legislator as that legislator's own family doctor, and hence we bend our efforts in giving our story to the doctor, who in turn gives the story to the legislator.

3. Don't fail to read the piece of legislation or the bill yourself against which you are protesting or which you advocate.

4. Don't make the mistake of underestimating the intelligence and integrity of your average legislator and of the general public. Both are better informed than we sometimes imagine and both are eager for facts and knowledge from authoritative sources.

We have changed the point of emphasis of our approach to the public a bit this year in Indiana. Through the Bureau of Publicity of the state association for many years we have scattered our shots over the landscape through the press, talks before luncheon clubs, and so on. Now we are becoming a bit more specific in our objectives, the state medical association having put on a two day program at the annual state social work conference. And we shall take part in a round table discussion on poor relief at the annual Township Trustees Association convention to be held in December.

5. Don't forget that the public and legislators are keenly alert at the present on any subject that has to do with health or safety. It was said of one legislature in session last winter that the best way to assure the passage of a bill was for the advocate to state "Gentlemen, this is a health and safety measure."

6. Don't fail to have a constructive plan, if possible, to present to your congressman or legislator as an alternative plan for state or federal controlled medical services.

Dr. Van Etten was the guest speaker at our annual banquet. I'll have to confess right here that cocktails had been served, so every one was unusually eager for Dr. Van Etten's message.

"What kind of medicine do you want?" were the speaker's opening remarks.

"Do you want England's medicine or Hitler's medicine or Stalin's medicine or New Zealand's medicine or American medicine?

"Do you want socialized medicine or state medicine or democratic medicine?"

At that point one Hoosier shouted "Democratic medicine, hell, no!" So the banquet was a success.

Dr. Van Etten's closing remarks at our state meeting, which indicate that the American Medical Association is really in a position to develop and direct any national health program, are still receiving favorable comment from the Indiana profession. He said: "I believe that our people would be responsive to an American health program if the physicians of the country could be inspired to write it." Surely these words and those spoken yesterday by Dr. Rock Sleyster and the positive platform of the Board of Trustees, that may serve as an American Bill of Medical Rights, should give us inspiration and facts with which to do the job back home.

DISCUSSION

Dr. George H. Kress, California: We are gathered together to learn from one another and to profit from our past experiences. In California we have been obliged to learn many things in the past ten years. For example, the existing chiropractic law was enacted as an initiative law, by vote of the citizens of California, on Nov. 7, 1922. In those days the medical profession did not possess a type of organization capable of going before the people to carry on the needed educational campaign, to show the difference between standards of healing art training as theoretically expounded by cultist groups and as actually maintained by nonsectarian, scientific medicine. At that time an organization known as the League for the Conservation of the Public Health came into being, to aid in the then battle. In the seventeen years that have elapsed since that period, other struggles have been to the front. In the year 1932 the Public Health League of California, consisting largely of members of the medical, dental, pharmaceutic and nursing professions, was organized and in the following year was incorporated. This organization has been militantly active in support of the public health interests of California and has rendered notable service for scientific medicine. Thus, in November 1938, when an attempt was made through an initiative law to make the state of California the guinea pig for antivivisectionist endeavors in the United States, the Public Health League of California went into the field and through excellent organization in every county in California made it possible for the citizens of California to obtain a true picture of the issues at stake. In that battle the California Medical Association donated to the Public Health League and to the newly organized California Society for the Promotion of Medical Research a total sum of $15,000 for the distribution of educational literature among voters, in which the benefits arising to the public health, through animal experimentation, were explained. The antivivisection endeavor went down to defeat by a large vote. And again this year, on Nov. 7, 1939, after an arduous campaign, the proponents of an initiative act, designed to amend the initiative chiropractic law of 1922, saw their measure defeated at the polls by a vote of more than 2 to 1 (against the initiative, 1,852,902; in favor of the chiropractic initiative, 785,269). And this in spite of an alliance with the "Ham and Egg" promoters. Now, these rejection votes did not "just happen." They may be said to represent the considered thought and action of a large portion of the electorate of California, who were contacted by members of the medical profession and their friends. The method of organization is based on the county unit plan, as is the organization of the component county societies of constituent state medical associations. In each area the Public Health League has captains and lieutenants, each responsible for prompt telephonic and other contact to ten physicians, and so on. In the distribution of literature the members of the Woman's Auxiliary give excellent aid, for it is the wives and daughters who pick up the letters and postcards, signed by physicians, to be sent to their patients and friends. Nothing is left to chance. If time permitted it would be of interest to narrate some of the peculiar phases of this last battle with the chiropractors. I can only emphasize here the tremendous value of such a cooperating organization as a Public Health League, to bear the brunt of the active campaigning so necessary nowadays, if public health interests are to be adequately protected. Such an organization is equally effective in rural and in industrial and metropolitan centers because the whole purpose is to create organization down to the last interested person, as has been indicated. California has experienced the merits of this system in its rural, its city, its metropolitan, its county and its state activities, and we believe the procedures would be equally valuable in national work. During the last year, in order to promote educational work concerning the medical profession, the house of delegates of the California Medical Association authorized a special assessment of $10 (or $60,000 in all) for use by its Committee on Public Health Education in furtherance of its educational work in promotion of public health interests. It seems regrettable that a profession whose members render millions of dollars of gratuitous service to the people of the United States should also be called on to assess itself as a conservator of preventive and public health medicine. However, if the standards of scientific medicine are to be maintained and medical practice carried on as well in the future as in the past, there seems to be no other alternative.

Dr. A. T. McCormack, Kentucky: I am strongly tempted to tell you how well we do this thing in Kentucky. Many years ago, in 1883, when my father became the state health officer, he appointed a medical referee in each county in the state who was responsible for the attitude of the members of the legislature and the senate. We have never had any difficulty about it. It has been long since anybody has voted against us on any of these measures; they know they are not coming back if they do, so they just don't do it. Yesterday morning I felt encouraged when I saw this splendid, practical program that is workable, that means what we mean, that says we want to preserve for the people of this country the most valuable possession they have. Besides liberty itself the most valuable possession they have is the private practice of medicine.

Dr. Olin West, Chicago: I wish to bring to the attention of the secretaries of the state associations the question of accepting into active membership in the county societies and in the state associations of men who have never been licensed to practice in the states where they have been taken into membership. The by-laws of practically all county and district societies in this country require that members shall be legally registered in the counties in which they reside and practice. That provision has not been universally incorporated in the constitution and by-laws of the county societies, but it has been so generally incorporated that it has become an established principle and is one of the basic principles of the plan of organization of physicians in the United States. Certainly it is dangerous for any county medical society or any state medical association to violate its own by-law. In some states the faculties of medical schools have been taken into membership simply because they were scientific men who were thought able to contribute materially to the scientific programs of those societies. They were not licensed in the states in which they were teaching and, in my opinion, were not eligible to membership in those societies. There is no provision that enables a state association to take into membership anybody who is not first a member of its component county or district societies.

Dr. A. T. McCormack: Do not all the states require all the men who are teaching in medical schools to register?

Dr. West: No, indeed. There are many men teaching in medical schools who are licensed in some one state, but many men who are not licensed in the states where they practice. Our society by-laws provide for a classification of associate members. Those members enjoy all the rights and privileges of membership except the right to vote. They can participate in scientific work but they are not entitled to the right to vote. If you are going to take these men into membership, in fairness to the men who must fulfil the requirements of your constitution and by-laws with respect to membership you should put them in a separate classification. The time has come when there needs to be a careful examination of the constitutions and by-laws of all medical organizations in the United States. I find that what is considered an associate member in one state is considered an affiliate member in another state. A life member in one state is considered an honorary member in another state; an affiliate member in one state is considered an honorary member in another state. What I am most concerned about is that there shall be a compliance with the constitution and by-laws. In the District of Columbia there are, I believe, more physicians who are engaged in the various medical services of the federal government than are engaged in private practice. Many of them, splendidly qualified men, are not licensed to practice medicine in the District of Columbia. If they were taken into membership, the affairs of the Medical Society of the District of Columbia might conceivably be directed by men who have no interest whatever in the private practice of medicine. I can readily understand why the Medical Society of the District of Columbia might feel it necessary to refuse the privilege of full membership but does open the doors of the society to them as associate members. There is one thing in which, in my opinion, the Constitution of the American Medical Association is absolutely perfect. I shall read that section: "The objects of the Association are to

promote the science and art of medicine and the betterment of public health." There can be no higher, no more idealistic objects any organization could have than those. The door of membership in the American Medical Association is the door of membership into the county medical society. The Association has provided for Fellowship, associate, affiliate and honorary Fellowship. Those who are accepted into associate Fellowship enjoy all the rights of Fellowship. But we have in many places distinguished men not eligible for regular membership who want to participate actively in all the affairs of the organization in the places where they live. We now have two or three cases in which distinguished men are insisting that they should be permitted to become active members of county or district or state associations even though they are not licensed to practice in those particular political units.

DR. D. L. CANNON, Alabama: I wish Dr. West would make reference to the status of membership of medical officers in the Army and the Navy. Particularly I have reference to one who may have retired from the service and located in a state.

DR. WEST: Medical officers in the Army and Navy, as long as they are on active duty or if they have been retired because of physical disability or after long and honorable service, or if they are appointed as Surgeon Generals of the Army, Navy or Public Health Service, are officially recorded as Fellows of the American Medical Association. That is provided for in the Constitution and By-Laws. In most instances retired medical officers of the Army Medical Corps and the Medical Corps of the Navy and the United States Public Health Service either rest with their status as Fellows of the American Medical Association or they seek full membership in the county societies and the state associations in the territory in which they reside.

DR. CANNON: By licensure?

DR. WEST: They cannot get in if they are not licensed, except that some states have provided they can be accepted as members. There are one or two states, maybe more than one or two, that permit these men to be recorded as members.

DR. W. F. DONALDSON, Pennsylvania: They provide that by their by-laws.

STATE MEDICAL LEGISLATION

RHODE ISLAND

Bill Introduced.—S. 7 proposes to require applicants for licenses to practice any form of the healing art, as a condition precedent to their right to be examined and licensed by their respective professional boards, to pass examinations in anatomy, physiology, pathology, symptomatology, chemistry, bacteriology and public health to be given by a board of examiners in the basic sciences. The basic science board is to consist of three members selected by the director of health because of their knowledge of the basic sciences. One member of the board must be on the faculty of Brown University, one member on the faculty of Rhode Island State College and one on the faculty of Providence College.

WOMAN'S AUXILIARY

New Jersey

At a meeting of the auxiliary to the Burlington County Medical Society in Maple Shade, October 2, $50 was donated to the parent-teacher association to be used in the purchase of resuscitators for the Burlington County Hospital, Mount Holly, and Zurbrugg Memorial Hospital, Riverside. The auxiliary is also paying the expenses of a nurse in training at the Pennsylvania Hospital, Philadelphia.

New York

Dr. Lucy M. Cobb, of Utica, lectured on "This Business of Living" at Watertown October 19, under the auspices of the Woman's Auxiliary to the Jefferson County Medical Society.

At the November meeting of the auxiliary to the Medical Society of the County of Kings Miss Caroline Hood, of Rockefeller Center, gave an illustrated lecture on "Life Behind the Scenes at the Center."

The auxiliary to the Medical Society of Nassau County met in October in conjunction with the Nassau County Cancer Control Committee. Speakers were Drs. Arthur Martin, Earle G. Brown, John M. Swan, Richard Derby, Louis C. Kress and Norman Treves. The March of Time film on cancer control was shown. More than 150 women attended the meeting.

At the autumn meeting of the auxiliary to the Medical Society of Rensselaer County in Troy Dr. Eugene F. Connally spoke on "Methods Used in Diagnosis and Treatment of Cancer." Sergeant Russell of the state police spoke on "Finger Printing and Its Relation to Crime" at the October meeting of the auxiliary to the Schenectady County Medical Society in Schenectady.

South Carolina

Mrs. W. B. Furman, president of the auxiliary to the South Carolina Medical Association, Mrs. R. P. Jeanes, corresponding secretary, and Mrs. J. W. Kitchen, president of the auxiliary to the Pickens County Medical Society, were speakers at a recent meeting of the auxiliary to the Laurens County Medical Society in Laurens.

The auxiliary to the Abbeville County Medical Society will assist in the work of the County Health Unit during the coming year.

Miss Belle Buller, public health nurse at Pacolet Mills, spoke on "The Program of Health Work at Pacolet" at a recent meeting of the auxiliary to the Spartanburg County Medical Society in Pacolet.

Tennessee

The auxiliary to the Nashville Academy of Medicine and Davidson County Medical Society held its annual membership tea in Nashville December 3. More than 150 women were present.

At a recent meeting of the auxiliary to the Rutherford County Medical Society in Rutherford, Dr. John Cason spoke on "Value of Pneumothorax in the Control and Treatment of Tuberculosis."

The November meeting of the auxiliary to the Memphis and Shelby County Medical Society was held at the University Center in Memphis. Mrs. Henry G. Hill spoke on the old time doctor.

Washington

Special guests at the meeting of the auxiliary to the Yakima County Medical Society in Yakima October 10 were wives of new members of the county medical society. A program of vacation travel talks by members was presented. On November 13 Mrs. D. F. Bice, president, entertained the auxiliary with a program of music and a travelogue on Hawaii.

The auxiliary to the Pierce County Medical Society welcomed twenty-three new members in Tacoma October 12. Thirty-three new subscriptions to *Hygeia* were announced at this meeting.

The auxiliary to the Kitsap County Medical Society met at Ferndale November 6. Articles from *Hygeia* were reviewed. The wife of every member of the Kitsap County Medical Society is a member of the auxiliary.

Mrs. Luman S. Roach, president of the auxiliary to the Washington State Medical Association, was speaker at a meeting of the auxiliary to the Clark County Medical Society at the home of Mrs. Charles Otto, near Vancouver, November 7. A joint meeting of the auxiliary and the Medical Society was held at the home of Dr. and Mrs. Otto December 5.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Society News.—At a meeting of the Los Angeles Society of Ophthalmology and Otolaryngology December 18 Drs. Isaac H. Jones and William T. Grant spoke on "The Elsberg Precision Measurements of the Sense of Smell."——The Trudeau Society, Los Angeles, was addressed December 26 by Drs. John H. Urabec on "Hematogenous Pulmonary Tuberculosis" and Joseph LeRoi Robinson and William Dunn, "Detection of Tubercle Bacilli by Gastric Aspiration."——At a meeting of the San Mateo County Medical Society in San Mateo November 29 Drs. Grant L. Selfridge spoke on "Nutritional Factors in Relation to the Eighth Nerve" and Jesse L. Carr, San Francisco, "Recent Advances in the Study of Vitamins."

Court Orders License Restored.—Superior Judge Emmet H. Wilson has ordered that a writ be issued compelling the board of medical examiners to restore to Dr. Harry W. Boyd, Los Angeles, his license to practice medicine, which was revoked by the state board of medical examiners in 1939. The judge held that a license to practice a profession is a valuable property right which cannot be revoked except on competent evidence. The opinion pointed out that the only evidence offered against Dr. Boyd before the board of medical examiners consisted of hearsay, conclusions of witnesses and other evidence which would not be admissible in court, according to the Los Angeles *Journal*. The license had been revoked for aiding and abetting and use of a fictitious name, both in connection with the so-called Samaritan Treatment for Alcoholism, Los Angeles branch. Dr. Boyd graduated at the University of Pennsylvania School of Medicine, Philadelphia, in 1899 and was licensed to practice in California in 1922.

COLORADO

Society News.—Charles E. Willburn, D.D.S., La Veta, discussed "Children's Dentistry in Relation to Health" before the San Luis Valley Medical Society November 21.——At a meeting of the Colorado Neurological Society, Denver, December 16 Dr. Roland M. Klemme, St. Louis, spoke on "Surgical Treatment of Paralysis Agitans, Athetosis and Dystonia."

CONNECTICUT

Changes in Health Officers.—Dr. George S. Lambert, Danielson, has been appointed health officer of Brooklyn. Dr. Julian G. Ely, Old Lyme, has been named health officer of Salem and Dr. Arthur D. Marsh, Hampton, of Chaplin. Dr. William V. Wener, Norwich, has been appointed health officer of Bozrah. Dr. Francis H. Burke, Rockville, has been appointed health officer of Tolland.

Coppola Fined.—Modestino Coppola was recently sentenced to pay a fine of $100 and costs in the superior court for New Haven County for practicing medicine illegally. He was also given a suspended jail sentence of one year. Coppola's license to practice medicine in Connecticut had been revoked by the state department of health Dec. 4, 1923, during the diploma mill investigations by the special grand jury, according to the Connecticut *Health Bulletin*.

DISTRICT OF COLUMBIA

A Larger Morgue for Washington.—Dedicatory ceremonies November 21 marked the completion of a new $100,000 building on the grounds of Gallinger Hospital to house Washington's new morgue. In an address, Dr. Andrew Magruder MacDonald, coroner, outlined the activities of the coroner's office and showed the increase in the work from the time the unit was established in 1868. In this year the city had six suicides, seven murders, 136 accidents, 507 deaths, twenty-two inquests and twenty-six autopsies. In 1939 there were 143 suicides, seventy-six homicides, 437 accidents, 2,557 deaths, 140 inquests and 568 autopsies.

Society News.—Dr. Francis H. Adler, Philadelphia, addressed the Washington Ophthalmological Society January 8 and Dr. LeRoy W. Hyde presented a case report on "Vitamin A Deficiency."——A general practitioner's forum will be presented before the Georgetown Clinical Society January 16 by Drs. Warren B. Burch, John V. Dolan, Richard J. McNulty and Ernest H. Aschenbach.——The Georgetown University Alumni Club was organized as a new society recently in Copley Hall at the university; Dr. Leo B. Norris was chosen president; Dr. Aloysius J. B. Connolly, vice president, and Dr. Harry F. Davies, secretary.——Dr. Edith Weigert-Vowinckel discussed "Psychoanalytic Notes on Sleep and Convulsion Treatment in Functional Psychoses" before the Washington-Baltimore Psychoanalytic Society December 9.——Dr. Katherine Elizabeth Parker addressed the Women's Medical Society of the District of Columbia December 5 on "Recent Advances in Endocrinology."——A symposium on the surgical abdomen will be presented before the Medical Society of the District of Columbia January 24 by Drs. Matthew White Perry, Edward A. Cafritz and James A. Cahill Jr. Among others, Dr. Edward M. Pickford will present an illustrated lecture before the society January 17 on carcinoma of the uterine cervix with skin metastases.——Dr. Walter E. Dandy, Baltimore, addressed the George Washington University Medical Society December 16 on "Tic Douloureux."

FLORIDA

New Director of Maternal and Child Health.—Dr. William H. Ball, Panama City, director of the Bay County health unit, has been appointed state director of maternal and child health with headquarters in Jacksonville, newspapers reported. He will be succeeded in Bay County by Dr. Dea C. Witt, Jacksonville, who was transferred from the Ocala health unit.

Public Health Meeting.—Dr. Albert B. McCreary, state health officer, was elected president of the Florida Public Health Association at its eleventh annual convention in Jacksonville December 10. Other officers are Dr. Leander J. Graves, Tallahassee, and A. C. Newman, Jacksonville, vice presidents, and Dr. Edward M. L'Engle, Jacksonville, secretary-treasurer.

ILLINOIS

Past Presidents Honored.—The past presidents of the Peoria City Medical Society were entertained at the second annual dinner given in their honor at the Hotel Pere Marquette November 21. There are about twenty-five past presidents now living. Dr. Irving S. Cutter, dean, Northwestern University Medical School, Chicago, spoke on "Some Literary Physicians."

Personal.—Dr. Walter H. Baer, superintendent of the Peoria State Hospital, has been appointed acting superintendent at the Manteno State Hospital, Manteno, succeeding Dr. Ralph T. Hinton, it is reported.——Dr. Alonzo H. Hall, Niantic, recently was presented with a gold emblem by the state medical society, signifying the completion of fifty years in the practice of medicine.——Dr. Joseph T. Maher, formerly of Koch, Mo., has been appointed medical director of the Madison County Tuberculosis Sanitarium, Edwardsville, following the resignation of Dr. Oscar C. Heyer, who held the position for more than four years.

Chicago

Dr. Goldwater to Address Hospital Council.—Dr. Sigismund S. Goldwater, commissioner, department of hospitals of New York City, will address the fourth anniversary dinner of the Chicago Hospital Council at the Blackstone Hotel January 15. His subject will be "Do American Cities Need Both Voluntary and Tax-Supported Hospitals?"

Dr. Blair to Lecture on Facial Injuries.—Dr. Vilray P. Blair, professor of clinical surgery, Washington University School of Medicine, St. Louis, will address the Chicago Medical Society January 17 at the Chicago Woman's Club. His subject will be "Treatment of Facial Deformities Due to Trauma." A symposium on industrial medicine and traumatic surgery constitutes the clinical session at St. Luke's Hospital during the day.

Society News.—The Chicago Council of Medical Women was addressed January 10, among others, by Dr. Victoire D. Lespinasse on "Urinary Tract Changes in Pregnancy."——The Chicago Society of Allergy will be addressed January 15 by Drs. French K. Hansel, St. Louis, and Milton B. Cohen, Cleveland, on "Allergy of the Nose and Paranasal Sinuses from the Standpoint of the Otolaryngologist and the Allergist" and "Metabolic Aspects of Allergy" respectively.——At a meeting of the Chicago Pediatric Society January 16 Dr. Katsuji Kato will speak on "The Prothrombin in the Blood of

Newly Born Mature and Immature Infants as Determined by the Microprothrombin Test" and Dr. Eugene T. McEnery and Mrs. Frances Perlowski Gaines on "Tongue-Tie in Infants and Children."

Forum on Allergy.—The second annual Midwestern Forum on Allergy will be held January 13-14 at the Palmer House. Among the speakers will be the following:

O. C. Durham, North Chicago, Results of Atmospheric Research During 1938-1939.
Dr. Theron G. Randolph, Milwaukee, Studies in Mold Allergy.
Dr. Frederick W. Wittich, Minneapolis, The Nature of Various Mill Dust Allergens.
Drs. John Warrick Thomas and John R. Forsythe, Cleveland, Allergic Purpura.
Dr. Clarence Bernstein, Chicago, Comments on Differential Diagnosis and Management of Cardiac and Bronchial Asthma.
Dr. Mary E. H. Loveless, New York, Changes in the Serum and Skin of the Allergic Patient During Specific Therapy.
Dr. Ethan Allan Brown, Boston, New Method of Medication for Allergic Complaints.
Dr. Paul R. Cannon, Chicago, The Mechanism of the Arthus Reaction and Its Relationship to Allergic Inflammation.
Dr. Richard H. Young and Mr. Robert P. Gilbert, Use of Aminophyllin to Control Bronchial Spasm Induced by Histamine.
Dr. Michael Zeller, Chicago, Passive Transfer Studies in Neurologic Conditions.

INDIANA

Society News.—The Fort Wayne County Medical Society was addressed December 5 by Dr. Charles E. Galloway, Evanston, Ill., on "The Clinical Management of Toxemias of Pregnancy."——At a meeting of the Academy of Medicine and Surgery, Fort Wayne, December 12, Dr. Alan R. Chambers spoke on "Medicine and English Men of Literature."

New State Board of Health Building.—The Indiana State Board of Health now occupies a building at 1098 West Michigan Street, Indianapolis, on the campus of the Indiana University Medical Center. The T shaped building is four stories high. The stem of the T contains the auditorium, which seats about 1,000 persons and which has been named Hurty Hall in honor of the late Dr. John N. Hurty, a pioneer in public health work, who served as secretary of the board from 1896 until 1922. Two metal plaques at the entrance of the hall have been dedicated to Dr. Hurty. The building is of light buff brick trimmed with Indiana limestone, while the walls inside are of hollow tile. The executive offices are located at the west end of the second floor; most of the laboratories will be on the top floor. It is planned to dedicate the auditorium this year during the meeting of the Conference of State and Provincial Health Officers, of which Dr. Hurty was once president. The old home of the state board of health was at 102 North Senate Street. The building has an interesting medical history. It served as the Medical College of Indiana from 1895 to 1905, when it became the medical department of Purdue University. From 1908 until 1919 it served as the Indiana University School of Medicine and later, when the school was moved to the present site, it was used as the city dispensary. In 1927 the unit was sold by the state to the state university, and the state board of health moved into the first two floors.

IOWA

Personal.—Dr. and Mrs. James F. Clarke, Fairfield, were guests of honor at a banquet November 7 to observe the completion of fifty years in the practice of medicine by Dr. Clarke. Dr. Harold E. Graber was toastmaster.

Series of Pneumonia Meetings.—The state department of health sponsored a series of meetings in the central and western parts of Iowa in November and in the eastern half of the state during December. The meetings were in cooperation with the officers and members of the county medical societies. The moving picture "Management of the Pneumonias" was exhibited. It was prepared under the direction of Dr. Jesse G. M. Bullowa, clinical professor of medicine, New York University College of Medicine, New York, and was shown at the Iowa meetings by Dr. Florian E. Schmidt, Chicago.

KANSAS

Personal.—Drs. Henry G. Hurtig and Fred H. Rhoades were guests of honor at a dinner meeting of the Washington County Medical Society November 14 in celebration of their combined fifty years of practice in Hanover.

Society News.—The Shawnee County Medical Society devoted its meeting January 8 to a panel discussion on socialized medicine with the following speakers: Mr. Clarence G. Munns, Drs. Robert B. Stewart, Douglass W. Orr and Forrest L. Loveland, Topeka.——At a meeting of the Golden Belt Medical Society, Salina, January 4, the speakers were Drs. Severt A. Anderson, Clay Center, on "A Case of Asthma Treated with Sulfapyridine"; Henry H. Turner, Oklahoma City, "Endocrinology in General Practice"; Wade H. Miller, Kansas City, Mo., "Aviation Medicine," and Robert H. Peckham, Ph.D., Hanover, N. H., "Aniseikonia." Dr. Arthur E. Hertzler, Halstead, was the dinner speaker.

MARYLAND

Society News.—The speakers before the Baltimore City Medical Society January 19 will include Drs. Henry M. Thomas Jr. on "Symptomatic Treatment of Hypertension" and Caroline C. B. Thomas on "Potassium Thiocyanate in Treatment of Hypertension."

Seminars on Industrial Health.—The committee on industrial health of the Medical and Chirurgical Faculty of Maryland is sponsoring a series of seminars on industrial health. Speakers at current sessions include:

Dr. Boyd R. Sayers, Washington, D. C., January 9, Carbon Monoxide as an Industrial Hazard.
Dr. Clarence D. Selby, Detroit, January 23, Medical Service in Industry.
Dr. Hans W. Lawrence, Cleveland, February 6, Personnel Management—Medical Service Relationships.
Dr. Anthony J. Lanza, New York, February 20, The Dust Hazard in Industry.
Dr. Huntington Williams, Baltimore, March 5, Public Health Administrator's Viewpoint on Industrial Health.
Manfred Bowditch, Boston, March 12, The Chemical Aspects of Occupational Hazards and Their Control.
William B. Kouwenhoven, Baltimore, March 26, Electrical Aspects of Occupational Hazards and Their Control.

MASSACHUSETTS

Fellowship in Pathology.—A research fellowship in the laboratory of pathology at the Collis P. Huntington Memorial Hospital and in the department of pathology at the Harvard Medical School will be available September 1. According to *Science*, it carries a stipend of $3,000 and may be renewed for a second year. The fellow will be expected to devote most of his time to histologic and cytologic studies of the effects of radiation of different types on normal and pathologic tissue. Application should be addressed to Dr. Shields Warren at the Collis P. Huntington Memorial Hospital, Boston.

Society News.—At a meeting of the Harvard Medical Society in Boston December 12 A. Baird Hastings, Ph.D., Cambridge, discussed "Tissue Electrolytes."——The New England Heart Association was addressed in Boston December 18 among others by Drs. Richard V. Ebert on "The Hemodynamic Effects of the Application of Tourniquets"; Francis F. Rosenbaum, "The Value of Electrocardiography in the Prognosis of Coronary Thrombosis," and Paul B. Beeson and Samuel A. Levine, "Sulfanilamide and Heparin in the Treatment of Subacute Bacterial Endocarditis."——Included among the speakers before the New England Roentgen Ray Society, Boston, December 15 were Drs. Charles G. Mixter, Boston, on "The Value of Cholangiography During Operation" and William S. Altman, Quincy, "Changes in the Uterus Following Roentgen Therapy; Demonstrated by Uterography."

MICHIGAN

Changes in State Health Department.—Dr. Edwin L. McQuade, formerly director of rural health in the Virginia State Department of Health, has been appointed a member of the bureau of epidemiology of the state department of health; he will direct the program for the detection and control of typhoid carriers. Amalia E. Lautz, Ph.D., assistant professor of home economics, Butler University, Indianapolis, has been placed in charge of the newly organized nutrition division of the state department of health; the division will function under the bureau of maternal and child health.

Society News.—Dr. Clarence A. Mills, Cincinnati, addressed the Wayne County Medical Society, Detroit, December 18, on "Climatic and Weather Influences on Health and Disease."——Dr. Rush McNair, Kalamazoo, addressed the sixty-fifth annual meeting of the Michigan State Historical Society recently, among others, on "Medical Practice in Horse and Buggy Days."——Henry F. Vaughan, Dr.P.H., health commissioner of Detroit, was elected president of the Michigan Public Health Association at its twentieth annual meeting in Grand Rapids November 9. The 1940 session will be held with the annual meeting of the American Public Health Association in Detroit in October.——Jack D. Laux, B.S., director of the medical service plan for the Michigan State Medical Society, Lansing, discussed group medical service before the Washtenaw

County Medical Society in Ann Arbor December 12.——Dr. Gordon B. Myers, Detroit, discussed "Treatment of Diabetes Mellitus" before the Ingham County Medical Society, Lansing, November 21.

MINNESOTA

Society News.—At a meeting of the Minneapolis Surgical Society December 7 the speakers were Drs. Lucius H. Fowler and William A. H. Hanson on "Gastric Jejunal Ulcer Following Gastro-Enterostomy for Pyloric Stenosis"; Ralph Emerson Weible, Fargo, N. D., "Leiomyosarcoma of the Small Intestine," and Arnold Schwyzer, St. Paul, "Congenital Cysts and Fistula of the Neck."——The Hennepin County Medical Society devoted its meeting December 27 to a discussion of drugs used in cardiac therapy; the speakers were Harold N. G. Wright, Ph.D., on pharmacology; Drs. Henry L. Ulrich, internal medicine, and Max Scham, pediatrics. Dr. Hobart A. Reimann, Philadelphia, addressed the Hennepin County Medical Society and the staffs of the Swedish and Northwestern hospitals January 8 on "Newly Recognized Diseases of the Respiratory Tract."

Illegal Practitioners Sentenced.—Arthur N. Alexander pleaded guilty December 9 to an information charging him with the crime of abortion and was sentenced by Judge Arthur W. Selover of the district court of Hennepin county to a term not to exceed two years at hard labor in the state prison at Stillwater. In 1935 Alexander's license to practice chiropody in the state was revoked by the state board of chiropody examiners when he pleaded guilty to a charge of practicing healing without a basic science certificate. J. F. Brown, also known as William Brown, Ely, pleaded guilty to a charge of practicing healing without a basic science certificate and was sentenced to six months on the St. Louis County Work Farm. He was told that after he had served thirty days the court would suspend the remaining five months and place him on probation for one year on condition that he refrain from practicing healing in any way, shape or manner. Brown had been representing himself as a "rheumatism doctor" and had been giving various medications to patients, charging them for each treatment.

MISSISSIPPI

Public Health Meeting.—At a meeting of the Mississippi Public Health Association at the Robert E. Lee Hotel, Jackson, December 6-8, among other speakers were the following:

Dr. Archie L. Gray, Jackson, Epidemiology in Local Health Service.
Mr. Roy J. Morton, Nashville, Tenn., Correlation of Instruction in Sanitation with Public Health Practice.
Dr. Reginald M. Atwater, New York, Teamwork—The Public Health Worker and His Professional Society.
Dr. James L. Bowman, Montgomery, Ala., Health Education in the Schools.
Harold H. Walker, Ph.D., Knoxville, Tenn., Health Plus Education Equals Health Education—Factors in the Failure or Fulfilment of a Formula.
Dr. James S. McLester, Birmingham, Public Health Nutritional Problems in the School Child.
Dr. William D. Smith, Senatobia, How a Part Time Health Officer Can Foster and Facilitate the Establishment of Permanent Health Work.
Dr. Knox E. Miller, Washington, D. C., Inherent Harm to Public Health in Erroneous Advertising.
Dr. Frances C. Rothert, New Orleans, Our Problem—Maternal Health, and How It Will Be Met.

NEBRASKA

Society News.—Drs. Maurice E. Grier and Ralph H. Luikart, Omaha, addressed the Madison Six County Medical Society in Norfolk December 12 on "Placenta Praevia" and "Indications for Version and Forceps" respectively.——At a meeting of the Tri-County Medical Society in Tekamah November 27 the speakers were Drs. Clayton F. Andrews, Lincoln, "Industrial Accidents and Compensation Laws"; Morris Nielsen, Blair, "Hypertension," and Walter W. Carveth, Lincoln, "Treatment of Varicose Veins."——The Five County Medical Society met December 5 in Wayne with the following speakers: Drs. John W. Schwartz and Thomas R. Gittins, Sioux City, Iowa, on cancer of the cervix and acute conditions in the chest from the bronchoscopic standpoint, respectively.

NEW YORK

Medal Offered for Ophthalmologic Work.—Dr. Harold W. Cowper, Buffalo, directs attention to the gold medal awarded annually by the University of Buffalo for work in an ophthalmologic subject. For details write to Dr. Cowper, 543 Franklin Street, Buffalo.

Nutrition Forum on Farm and Home Week Program.—The New York State College of Home Economics at Cornell University, Ithaca, announces a "Nutrition Forum" as part of its annual Farm and Home Week February 12-17. The nutrition program will be given Wednesday afternoon February 14. The speakers will be:

Helen S. Mitchell, Ph.D., Massachusetts State College, Amherst, Protein and Calory Needs.
Leonard A. Maynard, Ph.D., New York State College of Agriculture, Ithaca, Mineral Metabolism.
Lee C. Norris, Ph.D., New York State College of Agriculture, Ithaca, Vitamin Metabolism.
Clive M. McCay, Ph.D., New York State College of Agriculture, Ithaca, Adult Nutrition and Longevity.
Helen Monsch, M.A., New York State College of Home Economics, Ithaca, Child Nutrition and Family Feeding.
Dr. William H. Sebrell Jr., U. S. Public Health Service, Washington, D. C., Summary and Conclusions.

New York City

Fourth Harvey Lecture.—Leslie C. Dunn, Sc.D., professor of zoology, Columbia University, will deliver the fourth Harvey Society Lecture of the current series at the New York Academy of Medicine January 18. His subject will be "Heredity and the Development of Early Abnormalities in Vertebrates."

Award to Howard Blakeslee.—Howard W. Blakeslee, science editor of the Associated Press, is to receive the Wilson L. Fairbanks Award of the American College Publicity Association for 1939, the New York *Times* reported December 31. The award is made annually to the person who has done most during the year for the cause of education in the news. Mr. Blakeslee will receive the award at a meeting of the association January 20.

Personal.—Dr. John J. Moorhead was honored with a testimonial dinner December 18 in recognition of his work as chairman of the committee on publicity of the New York Academy of Medicine. The dinner was attended by members of the Academy and representatives of the press.——Dr. James B. Murphy recently received the decoration of "Officer of the Order of Leopold" of Belgium. The honor was conferred by the King of the Belgians in recognition of Dr. Murphy's cancer research, according to *Science*.

Society News.—The Bronx County Medical Society held an economic meeting December 20 with Nathan Sinai, Ph.D., Ann Arbor, Mich., and Dr. Frederic E. Elliott as the speakers on "The Medical Economic Scene" and "Medical Expense Indemnity" respectively.——Drs. William E. Howes and Samuel G. Schenck presented a paper on "Roentgenologic Considerations in Primary Malignant Bone Tumors" and Dr. Ralph E. Herendeen a paper on "Roentgen Diagnosis of Giant Cell Tumors of Bone" at a meeting of the Long Island Radiological Society November 30.——A symposium on "Bronchopleural Fistula" was presented at the clinical session on chronic pulmonary diseases of the Tuberculosis Sanatorium Conference of Metropolitan New York December 20. The speakers were Drs. George C. Cole, Milton S. Lloyd, Daikichi Matsuzawa, George G. Ornstein and David Ulmar.

NORTH CAROLINA

District Meeting.—The Seventh District Medical Society met in Rutherfordton November 28 with the following speakers, among others, at an afternoon session: Drs. Walter E. Daniel, Charlotte, on "Principles of Chemotherapy in Gonorrhea"; Harold C. Whims, Rutherfordton, "Syphilis of the Cardiovascular System," and Brodie C. Nalle, Charlotte, "Dystocia of Soft Parts." Dr. Paul H. Ringer, Asheville, addressed a banquet session on "Present Status of Tuberculosis Situation in Southern States."

State Pathologists Meet.—The annual meeting of the North Carolina Pathological Society was held in Winston-Salem December 12. The speakers included Drs. Wiley D. Forbus, Durham, on "Relation Between Hodgkin's Disease and Brucellosis," and Russell Holman, Chapel Hill, "Regeneration of Tissue Proteins." Dr. Lester C. Todd, Charlotte, was elected president. In the evening the society met with the Forsyth County Medical Society, with Dr. Kenneth M. Lynch, Charleston, S. C., as the speaker on pancreatitis.

OKLAHOMA

Personal.—Dr. David W. Gillick, superintendent and physician in charge of the Shawnee Indian Sanatorium, Shawnee, has been appointed medical director for district No. 5 of the Indian Medical Service, succeeding the late Dr. Walter S. Stevens. Dr. Ralph M. Alley, Pine Ridge, S. D., has succeeded Dr. Gillick.

Society News.—At a meeting of the Southern Oklahoma Medical Association in Ardmore December 5 the speakers included Drs. Arthur J. Schwenkenberg, Dallas, Texas, on "Recent Developments in Psychiatric Treatment"; George L.

Carlisle, Dallas, "Interpretation of Heart Murmurs," and John L. Holland, Madill, "Relation of the Medical Profession to the Public."——At a meeting of the Woods County Medical Society November 27 the speakers, all of Oklahoma City, were Drs. Curt O. von Wedel, "Role of Plastic Surgery in Injuries of the Face"; Paul C. Colonna, "Acute Osteomyelitis," and Robert L. Noell, "Fractures of the Elbow Joint."

PENNSYLVANIA

Society News.—Dr. John J. Shaw, state secretary of health, addressed the Washington County Medical Society, Washington, January 9 on "Medical Program of the State of Pennsylvania" and Dr. Milton I. Rose, Philadelphia, on "Present Day Trends of Public Health in the United States" respectively. Dr. Howard A. Power, Pittsburgh, addressed the society December 13 on "Complications of Labor."—— Dr. Walter I. Buchert, Danville, addressed the Centre County Medical Society in Bellefonte December 14 on phases of urology of interest to the general practitioner.

Philadelphia

Gifts to Aid University Research.—Grants amounting to $132,559 for scientific research have been made to the University of Pennsylvania recently as part of the fund being raised by the university in connection with its bicentennial celebration. The bicentennial activities begin January 17 with a Founder's Day program commemorating the birth of Benjamin Franklin, who founded the university, and will continue with various events until September. Among the gifts announced are:

Commonwealth Fund, $27,255 for streptococcus research, kidney research and study of air-borne infections.
Rockefeller Foundation, $12,650 for industrial research and other medical studies.
Smith, Kline & French Laboratories, $19,956 for physiologic chemistry, diabetes, dermatology and gastrointestinal research.
Estate of George S. Cox, $6,250 for research in diabetes.
National Tuberculosis Association, $5,971 for study of the chemistry of the tubercle bacillus and research on x-ray technic.
National Committee on Mental Hygiene, $2,500 for research in dementia praecox.
Nemours Foundation, $2,400 for a fellowship in pediatrics.
International Cancer Research Foundation, $1,415 for study of malignant tumors in frogs and x-ray therapy in larger animals.
Parke, Davis & Co., $3,000 for research on pituitary hormones.
Abbott Laboratories, $2,500.
Merck & Co., Inc., $2,000.

RHODE ISLAND

Hospital News.—Dr. Lawrence W. Smith, Philadelphia, gave a lecture at Memorial Hospital, Pawtucket, December 13 on "Reduced Temperature as an Adjunct in Cancer Therapy."——A new auditorium at the Rhode Island State Hospital for Mental Diseases, Howard, was dedicated recently to Dr. Arthur H. Harrington, superintendent of the hospital from 1907 to 1926 and now living in Providence. Dr. John E. Donley, Providence, made the dedicatory address and formally named the building the Arthur H. Harrington Assembly House.

GENERAL

Award for Endocrinology Established.—E. R. Squibb & Sons have established an annual award of $1,000 to encourage investigation in endocrinology, *Science* reports. The award will be made by the Association for the Study of Internal Secretions. Nominations for the 1940 award must be received before March 1 by the secretary of the association, Dr. Eberle Kost Shelton, 921 Westwood Boulevard, Los Angeles.

Midwestern Meeting of Ear, Nose and Throat Specialists.—The middle section of the American Laryngological, Rhinological and Otological Society will hold its annual meeting in Kansas City, Mo., January 19 at the Hotel Muehlebach. A symposium on the surgery of deafness will be presented by Drs. Walter Hughson, Philadelphia; Norton Canfield, New Haven, Conn., and Otto Jason Dixon, Kansas City, Mo. Among other speakers will be:

Dr. Andrew Eggston, New York, Cancer of the Larynx from the Pathologist's Point of View.
Dr. Frederick A. Figi, Rochester, Minn., Treatment of Chronic Stenosis of the Larynx.
Dr. Thomas E. Carmody, Denver, Management of Sinus Infections of Dental Origin.

White House Conference on Children.—The White House Conference on Children in a Democracy will be held in Washington January 18-20 under the sponsorship of President Roosevelt. Both the President and Mrs. Roosevelt will make addresses. Subjects on which group discussion meetings will be held are: health and medical care, education through the schools, democracy as it concerns the family, economic resources of families and communities, housing, economic aid, social services, children in minority groups, religion, child labor and youth employment, play and recreation. The Secretary of Labor, Miss Frances Perkins, will be chairman of the conference; Miss Katharine F. Lenroot, chief of the U. S. Children's Bureau, is executive secretary. The conference was organized in April 1939.

Society News.—Dr. William H. Woolston, Albuquerque, N. M., was chosen president-elect of the Southwestern Medical Association at the annual meeting in El Paso, Texas, November 9-11, and Dr. Orville E. Egbert, El Paso, was installed as president. Drs. Charles A. Thomas, Tucson, Ariz., and Kevin D. Lynch, El Paso, were elected vice presidents and Dr. Maurice P. S. Spearman, El Paso, was reelected secretary. The 1940 meeting will be in Tucson.——The seventeenth annual meeting of the American Orthopsychiatric Association will be held at the Hotel Statler, Boston, February 22-24; Dr. Norvelle C. LaMar, 149 East Seventy-Third Street, New York, is secretary.——The Women's Field Army of the American Society for the Control of Cancer will hold its second national assembly at the Brown Hotel, Louisville, Ky., February 14-16.

Conference on Medical Service.—The fourteenth annual meeting of the National Conference on Medical Service, formerly the Northwest Regional Conference, will be held at the Palmer House, Chicago, Sunday February 11. Among the speakers will be Drs. Roscoe L. Sensenich, South Bend, Ind.; Carl F. Vohs, St. Louis; Henry R. Carstens, Detroit; George H. Kress, San Francisco; Hilton S. Read, Atlantic City, N. J.; Charles H. Phifer, Chicago; Creighton Barker, New Haven, Conn.; Ernest E. Shaw, Indianola, Iowa, and Ralph C. Williams, Washington, D. C.; Mr. Paul G. Hoffman, president of the Studebaker Corporation, South Bend, and Mr. David H. McAlpin Pyle, of the United Hospital Fund, New York. Dr. Rosco G. Leland, Director, Bureau of Medical Economics, American Medical Association, Chicago, will present "Allocation of Federal Funds to States" and Drs. Morris Fishbein, Editor of THE JOURNAL, Chicago, and Edward J. McCormick, Toledo, Ohio, will discuss "Effective Public Relations."

Fellowship Available for Research.—The Society of the New York Hospital announces that a fellowship for research in medicine and surgery or in any closely allied field has been established by Mrs. Ruth E. Ledyard, wife of the late Lewis Cass Ledyard Jr., a governor of the hospital. The income amounts to about $4,000 annually, $3,000 to be used as a stipend and approximately $1,000 for supplies or expenses of the research. Preference will be given to younger applicants who are graduates in medicine and who have demonstrated fitness to carry on research of high order. The recipient will be required to submit reports of his work, and when the result of his work is published he will be expected to give credit to the fellowship. The work is to be carried on at the New York Hospital and Cornell University Medical College. The fellowship will be available July 1 and applications should be in the hands of the committee by February 15. Applications should be addressed to The Committee of the Lewis Cass Ledyard Jr. Fellowship, The Society of the New York Hospital, 525 East Sixty-Eighth Street, New York.

Academy of Orthopaedic Surgeons.—The eighth annual convention of the American Academy of Orthopaedic Surgeons will be held at the Hotel Statler, Boston, January 21-25, under the presidency of Dr. George E. Bennett, Baltimore. A clinical session will open the meeting Monday morning and the scientific session will begin Tuesday morning with a symposium on the treatment of tuberculosis of the spine. Among the speakers will be:

Dr. Edwin D. Weinberg, Baltimore, Syphilitic Lesions of Bones and Joints.
Drs. William B. Carrell and Harold M. Childress, Dallas, Texas, Tuberculosis of the Large Long Bones of the Extremities.
Dr. Royal S. Haynes, New York, Attainment of Good Posture by Use of Natural Reflex Mechanisms.
Dr. Albert B. Ferguson, New York, Treatment of Osteogenic Sarcoma.
Dr. Raymond E. Lenhard, Baltimore, The Conservative Treatment of Poliomyelitis with Paralysis.
Dr. Joseph Warren White, Greenville, N. C., Correction of Congenital Flat Foot by Astragalar Shortening.
Drs. Guy W. Leadbetter and Frank M. Hand, Washington, D. C., Restoration of Function in Fractures of the Tibial Plateau Complicated by Injuries of the Semilunar Cartilages.
Drs. Edward L. Compere and John H. Lee, Chicago, The Restoration of Physiologic and Anatomic Function in Old Ununited Fractures of the Neck of the Femur (Intracapsular); A Clinical and Experimental Study.

The annual banquet will be held Wednesday evening, when the presidential award and scientific awards will be presented.

Government Services

Appointments in Medical Corps of U. S. Naval Reserve

The surgeon general of the navy invites the attention of civilian physicians to the opportunity of becoming commissioned officers of the Medical Corps in the U. S. Naval Reserve. Male citizens of the United States, graduates of class A medical schools, who are under 50 years of age and who meet the physical and professional requirements, are eligible for appointment as commissioned officers in the medical corps of the naval reserve.

The naval reserve was created as a component part of the navy by the Naval Reserve Act of 1938. It is composed of citizens of the United States and of the insular possessions who, by appointment or enlistment therein or by transfer or assignment thereto, obligate themselves to serve in the navy in time of war or during the existence of a national emergency declared by the President.

Medical officers of the naval reserve are appointed in one of the following classifications: "Organized Reserve," "Volunteer, General Service Class," "Volunteer, Special Service Class" and "Merchant Marine Reserve." Appointments are made in the organized reserve on presentation of satisfactory credentials, which may be accepted in lieu of professional examinations as assistant surgeons with the rank of lieutenant (junior grade), between the ages of 21 to 32. The organized reserve consists of officers and men required to perform annual training and other duties and who shall be available for immediate mobilization. The volunteer, general service class is required to meet the same professional and physical requirements as members of the organized reserve. Members of this class are not required to attend drills or perform training duty but may request this duty with or without pay, depending on the availability of funds for this specific purpose. Appointments are made in the volunteer, special service class on the presentation of satisfactory credentials, which may be accepted as qualifying the candidate for appointment without a professional examination. The grade and rank for appointment in this class is determined by the candidate's age, professional standing and academic seniority. Applicants who are less than 31 years of age may apply for the rank of lieutenant (junior grade), those less than 37 years of age for the rank of lieutenant and those between the ages of 37 and 50 for the rank of lieutenant commander. Members of this class are not required to attend drills or perform training duty but may request this duty, with or without pay, depending on the availability of funds for this specific purpose.

The purpose of the organized reserve is to provide a trained force of officers and men which, added to qualified personnel from other sources, will be adequate in numbers and composition to complete the organization of the United States fleet.

The purpose of the volunteer reserve is to provide a force of qualified officers and men in numbers which, added to the officers and men in other branches of the reserve, will be adequate to fulfil the purpose of the naval reserve. The volunteer, general service officers may be associated with organizations of the organized reserve for training purposes and may be transferred to the organized reserve to fill vacancies in divisions, battalions or squadrons. The volunteer, special service class is composed of specialists, qualified by their professional experience and attainments, for appointment in one of the various special service classifications.

Medical officers of the merchant marine may apply for appointments as officers in the medical corps of the merchant marine reserve. The requirements for appointment in this class are the same as those for volunteer, special service. As far as is practicable, it is contemplated that officers and men of the merchant marine reserve will be assigned to duty on their own vessels.

Physicians desiring appointments as commissioned officers in the medical corps of the naval reserve should communicate with the commandant of the naval district in which they reside, requesting application blanks and a "Circular for the Information of Persons Desiring Appointments as Officers in the United States Naval Reserve." This circular contains full information regarding classification, promotion, pay allowances etc. If the addresses of naval commandants are not known, they may be obtained by addressing a letter to the Surgeon General of the Navy, Navy Department, Washington, D. C.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 7, 1939.

The Preparedness of the Army Medical Service

At the outbreak of the last great war Britain had a small army and was unprepared for a catastrophe of such magnitude. We had a supreme navy, which was thought quite sufficient for the safety of the country. A medical example of our unpreparedness is furnished by the retreat from Mons, which occurred soon after the outbreak of hostilities. We had to allow many of our wounded to fall into the hands of the enemy because there were not enough motor ambulances to transport them. Now the position is different. The danger of this war has been foreseen. In the medical service, as in all other branches, the preparations are meticulously complete.

THE BLOOD TRANSFUSION SERVICE

Arrangements on a scale never before known in the world have been made for blood transfusion. Volunteers for blood donation have been enrolled all over the country, from whom "universal donors" have been selected. From them blood is regularly drawn and sent to central depots in refrigerating vans. Thence it is sent to France, where it is stored. Blood so treated can be used for fourteen days. After that period it is discarded. Each bottle is labeled so that, if necessary, it can be traced to the donor. In France small mobile units with refrigerating facilities are ready to transport the blood to any part of the country.

Relapse Following Sympathectomy of the Arm

The disappointing results following sympathectomy of the arm in the treatment of vascular disease of the hands contrast with the success of lumbar ganglionectomy. The cause of the recurrence of symptoms is one of the problems of vascular surgery. From the Department of Clinical Research in the Disorders of the Autonomic Nervous System of the Royal Infirmary, Manchester, Mr. H. T. Simmons and Dr. Donal Sheehan, now professor of anatomy at New York University College of Medicine, in collaboration with Mr. H. T. Simmons, report in the *British Journal of Surgery* (**27**:234 [Oct.] 1939) on the subject. Their material consists of thirty-eight cervicothoracic ganglionectomies done in 1931-1934 and twenty-nine preganglionic sections of the thoracic cord performed since February 1935. Immediately after sympathetic denervation, of whatever kind, the condition of the fingers always improved except when digital thrombosis or extreme sclerodactyly existed. But the resulting high temperature of the skin is not maintained and a steady decline occurs till a level is reached usually several degrees above the preoperative temperature. This decline of cutaneous temperature after sympathectomy occurs both in the hands and in the feet, even when the operation is performed for nonvascular disease, and presumably is due to resumption of a certain degree of tone in the blood vessels by virtue of their inherent muscular activity. The writers do not regard this decline as a relapse after sympathectomy, because it is an inevitable sequel, and the value of the operation lies in the residual permanent dilatation of vessels. They are concerned with reappearance of symptoms, which they found may be early (within a few weeks of operation) or late (not for several months). Both types of operation were liable to be followed by relapse, but it appeared earlier after preganglionic section than after ganglionectomy. Excluding cases of incomplete denervation, the early relapse was found to be due to a local fault in the digital vessels so severe as to be able to nullify the effect of sympathetic denervation. The late relapse, on the other hand, was accompanied by regeneration of vasoconstrictor fibers. The reappearance of these fibers was first observed when or shortly before clinical relapse

became apparent. The symptoms became steadily worse and at the same time there was gradual increase in the degree of dilatation obtained by anesthetization of the ulnar nerve. It was therefore concluded that regeneration of vasoconstrictor nerve fibers was the cause of this late relapse after sympathectomy, but a progressive local fault in the digital vessels may also play a part.

Professor Wilfred Trotter

The death, at the age of 67 years, of Prof. Wilfred Trotter, F.R.S., sergeant surgeon to the king, has removed the most eminent surgeon of the day. He was educated at University College, London, and spent the rest of his life at its medical school and hospital. He was physically frail and his schooling had been interrupted by spinal disease. Sir Thomas Barlow doubted whether he would survive city life, but his career was one of uninterrupted success and he graduated in medicine with honors in 1896. At University College Hospital he became a demonstrator of anatomy and in 1901 surgical registrar, thus making the usual progress to the post of assistant surgeon. He was also appointed surgeon to the East London Hospital for Children. An expert technician and incisive thinker, he soon began to exercise a great influence. He was attracted to difficult surgical problems and made a reputation for removal of malignant growths which daunted others, particularly in the mouth and pharynx, for which he laid down principles of permanent value. His first paper, on the surgery of the hypopharynx, was read before the Medical Society of London. It lasted only ten minutes but left his audience speechless because it was so complete. Later he delivered Hunterian lectures on malignant disease of the upper respiratory and alimentary tracts which were authoritative for a generation. He and Victor Horsley were the pioneers in England in surgery of the thyroid gland. Another subject which he illuminated was head injuries, on which he wrote the article in Choyce's System of Surgery. He and his assistant Mr. Morriston Davies performed experiments on their own limbs on the clinical evidences of nerve regeneration. This work is recognized as of permanent value. He became preeminent in the surgical world, the consultant to whom other surgeons would turn for advice. His opinion was regarded as reliable as anything human can be. Honors of all kinds were showered on him, including the highest scientific one, the F.R.S., which he was the only surgeon to possess. He earned the gratitude of the late King George whom, in conjunction with Sir Hugh Rigby, he treated for empyema. But he firmly declined to accept a title, which in this country is the usual ambition of the distinguished physician or surgeon.

TROTTER THE SURGEON AND TROTTER THE PHILOSOPHER

An astonishing fact is that Trotter achieved distinction of the first rank not only as a surgeon but as a philosopher. In 1908 he contributed two papers to the *Sociological Review* entitled "Herd Instinct." He argued that herd instinct not only was responsible for the phenomenon observed in crowds but determined the thought and behavior of each individual, however isolated he might be. In it he found an important source of the individual's "opinions, credulities, disbeliefs and weaknesses." He later expanded his views in a book entitled "Instincts of the Herd in Peace and War," which is generally regarded as a masterpiece. In Germany it led to the mistake of thinking that there were two men, Trotter the surgeon and Trotter the philosopher. Much that he wrote was inspired by the last great war, and its application to the present war is obvious. He made a penetrating analysis contrasting the German and English mentalities. Germany was the type of the aggressive herd; she had modeled her soul on the wolf's. She was already a finished product; her ideal was fulfilled. She had nothing to strive for except to impose her will on the world. England had taken as her model the bee and still lagged behind fulfilment of her ideal. In her unbroken security of a thousand years she had leisurely, perhaps lazily, pursued her path toward social integration of an ever closer and deeper kind. She had no thought of herself, no consciousness of her destiny, no will to power. She had allowed her empire to be won by restless younger sons and had shown no gratification in their conquests. After a thousand years she seemed as far as ever from her goal. Her society was irregular, uncoordinated and split into classes at war with one another.

AUSTRALIA

(From Our Regular Correspondent)

Dec. 6, 1939.

Australian Poisoning Statistics

Details of deaths from poisoning in Australia for the year 1938 correspond closely with those for 1937, the lowest for ten years. Suicides by poison during the year totaled 170 and deaths from accidental poisoning thirty-seven. The incidence of accidental poisoning is recorded as one in every 187,289 of population or one to 1,796 of total deaths. Other figures show that fourteen deaths from snake bite occurred in 1938, the highest for eight years, and eighteen deaths were due to food poisoning. It is clear, however, that the general trend of these statistics is downward, thus affording a primary justification for the inconveniences imposed by statute and regulation at all stages of the normal chain of distribution of poisons.

Science and Humanity

Dr. R. A. Millikan, American scientist, has recently completed a lecture tour of the Australian states on the general theme Science at the Service of Humanity. The motives of men, their mode of life and their outlook were much the same, he says, when his grandfather in 1825 loaded in a covered wagon his young wife and all his worldly goods and trekked west from Massachusetts to the banks of the Rock River in western Illinois as when, 4,000 years before, Abraham trekked west from Ur, of the Chaldees. But the changes that have occurred within the last hundred years, not only in the external conditions under which the average man passes his life on earth but in his superstitions, philosophy, conception of religion and world outlook, are probably greater than those of the preceding 4,000 years. Life seems to remain static for thousands of years and then to shoot forward with amazing speed. The cause of the recent rapid and enormous change is found in the discovery and utilization of the means by which heat energy can be made to do man's work for him. The key to the whole development is found in the use of power machines. It is of the utmost importance for human progress to get into the consciousness of the common man the significance of the fact that use of power has brought about these social changes. This is why we no longer drive our ships with human slaves, as did the Romans and Greeks. This is why we no longer enslave whole peoples, as did the Pharaohs, for building our public structures and lash them to their tasks. This is why ten times as many boys and girls go to high school today in the United States as were there in 1890. This is why we have now an eight hour day, instead of, as then, a ten or sometimes fourteen hour day. Science makes it well-nigh certain that we shall increase in economic well-being in future as we have in the past in just the proportion in which we continue to apply science and engineering to our industries. Science should produce more in goods and services each hour and free more men and give more brains to education, research and art. Forecast of the future must depend first on what the future sources of power are to be and on the cost of that power. At present the main sources of power are coal and oil. This situation will continue for a thousand years, for though the oil will perhaps be gone in fifty years the coal will last for at least another millenium. The big steam plant is now nearly or quite as efficient as the best Diesel motor, but for small power purposes, motor vehicles and the like the internal combustion engine is and will continue to be indispensable. How-

ever, we already know how to make liquid fuel from coal, so that when the oil is gone we shall still be able to get liquid fuel for our internal combustion engines. There are no other possible sources of power of comparable cheapness. When the oil and coal are gone we shall get power either directly from the sun through solar motors or windmills or tidal machines, or else directly through growing and burning plants. But it will then cost us more than it does now. Fifty years from now the world will look to us, from the point of view of power, not so very different from what it looks now. But the most burning and most uncertain situation about the future has to do with social and political matters and it should be remembered that these forecasts are based on the assumption that our present civilization will not be destroyed by man's present or prospective wickedness, stupidity and folly. To prevent it the democracies must educate the common man to an understanding of a few of these fundamentals. Processes and technics responsible for the enormous changes of the last century will continue to improve greatly our economic and social well-being, but the main changes will come from a more general understanding by the voting public of these processes and a more intelligent use of them.

BUENOS AIRES

(From Our Regular Correspondent)

Dec. 18, 1939.

Health of the Argentine Army

According to statistics published by Dr. G. Ruzo in the *Revista de sanidad militar*, illness in the army for 1938 was distributed as follows: total incidence 37.4 per cent (43.6 per cent in 1937), infectious diseases 17.9 per cent (20.8 in 1937), injuries 4.9 per cent (5.6), diseases of the digestive tract 3.2 per cent, of the respiratory organs 3.1 per cent, venereal diseases 2.5 per cent (3.4 in 1937), influenza 6.6 per cent, parotitis 5.4 per cent, measles 2.3 per cent, gonorrhea 2.1 per cent, pneumonia and bronchopneumonia 1.2 per cent, acute arthritis 0.5 per cent, diphtheria 0.3 per cent and typhoid 0.1 per cent. Deaths occurred in the ratio of 0.53 per cent (0.73 in 1937), chiefly from infectious diseases, pneumonia and bronchopneumonia.

Public Instruction Concerning Malaria

The malaria control division of the state department of health has initiated the publication of a health almanac for monthly distribution in which public attention is called to the dangers of malaria. Every calendar issue treats of a different subject, such as the treatment of malaria, advantages of a physical examination, free distribution of quinine through the state health department, the different kinds of mosquitoes, construction of protective cradles against the anopheles (including all necessary mechanical directions of how to make them, intended for rural sections) and the destruction of breeding places. The calendar sheets are artistically drawn up and also contain useful, easily understandable, illustrated agricultural information.

Enlargement of the Cancer Institute

A new six story pavilion was added to the Institute of Experimental Medicine for the Study and Treatment of Cancer in Buenos Aires and dedicated December 12. It contains 250 beds in separate rooms, thus increasing the total capacity to 550 beds, and two well equipped air conditioned surgical rooms. All modern ideas of hospital technic were incorporated in its construction and equipment. The cost amounted to about 1,000,000 pesos (about $300,000). This Cancer Institute founded in 1923 is connected with the University of Buenos Aires and has been for sixteen years under the direction of Prof. A. H. Roffo, its founder. The original hospital consisted of one building. Now there are thirteen buildings, inclusive of the new pavilion, which occupy an area of 12½ acres. Its annual budget is 260,000 (Argentine) pesos (about $78,550), with additional donations and endowments.

The work of the institute is done in three divisions: medical research, diagnosis and treatment, and social welfare. The research activities are devoted to the experimental study of cancer, biochemistry, physical chemistry, experimental pathology, pathologic anatomy, tissue culture, radiobiology and experimental surgery. The diagnostic division has a dispensary for the early diagnosis and treatment of outpatients. Up to the beginning of 1939, 82,000 patients had been examined in the dispensary; clinical treatment is in the hands of specialists. The annual number of patients has risen from 1,772 in 1923 to 8,554 in 1938, the number of consultations from 6,767 to 91,752, the number of treatments from 3,900 to 50,279. The total number of treatments (end of 1938) was 354,000. In 1923, 422 persons were admitted; in 1938, 3,174; altogether 27,599. The division of social welfare does not confine itself to handling patients of the institute. It seeks to educate the public by means of pamphlets and lectures. A "cancer hour" in held every Saturday, in which the schools may participate. There is a visiting nurse service which accords special attention to carcinomatous housewives and mothers. There is also a school of nurses.

A New Military Hospital

In May of this year the new large military hospital with its modern equipment was dedicated. The old military hospital is to serve henceforth as a tuberculosis sanatorium for the treatment and prophylaxis of this disease and will bear the name of Central State Hospital.

Marriages

Marvin Bernard Goldstein, Youngstown, Ohio, to Miss Emily Elizabeth Keller, at Newark, N. J., Nov. 4, 1939.

Frederick Da Costa Austin Jr., Charlotte, N. C., to Miss Elizabeth Howard, of Fuquay Springs, Nov. 15, 1939.

Edward Frank Kaye, Irvington, N. J., to Miss Evelyn Louise Heath, at Worcester, Mass., Dec. 30, 1939.

William Dempsey Farmer, Durham, N. C., to Miss Elizabeth Sellars, of Burlington, in November 1939.

Herbert M. Keil, Portsmouth, Ohio, to Miss Antoinette McKenzie, at Temperanceville, Nov. 18, 1939.

Ercole A. Addonizio, Providence, R. I., to Miss Beatrice A. Meliusis, of Shenandoah, Pa., Nov. 11, 1939.

Raymond George Jacobs to Miss Mildred Loomis, both of Enid, Okla., in New Orleans, Nov. 4, 1939.

Maurice J. McElligott, Boston, to Miss Veronica Durkee, of Woburn, Mass., in November 1939.

Valentine R. Manning Jr., Philadelphia, to Miss Frances K. Blanch, of Bristol, Pa., Nov. 23, 1939.

Francis John Denning, Steubenville, Ohio, to Miss Eileen Gallagher, of Chicago, Nov. 23, 1939.

Donald A. Cowan, Sault Ste. Marie, Mich., to Miss Esther E. Ball, of Brimley, Dec. 2, 1939.

Philip Wood Oden to Miss Martha Lorraine Sanders, both of Richmond, Va., Sept. 9, 1939.

Grover Cleveland English to Miss Ann Dooley, both of Mount Pleasant, Tenn., recently.

Hugh S. Edwards, Atlanta, to Miss Kathleen A. Williams, of Holden, Mass., Dec. 9, 1939.

Clayton S. Hitchins to Miss Florence Jeannette Shive, both of New York, Nov. 2, 1939.

Dennis B. Fox, Nashville, Tenn., to Miss Dora Helen Jones, of Jonesboro, Dec. 15, 1939.

Clifford W. Kuhn, Portland, Ore., to Miss Florence Palm, at Wheeler, Nov. 26, 1939.

Leo Herman Criep to Miss Merla Jane Rosenfield, both of Pittsburgh, Dec. 14, 1939.

Allen H. Hoover to Miss Margaret B. Dailey, both of Chicago, Oct. 21, 1939.

George Davis, Xenia, Ohio, to Mrs. Olga Reed of Mansfield, recently.

Deaths

William Reginald Morse, Lawrencetown, Nova Scotia, Canada; McGill University Faculty of Medicine, Montreal, 1902; Associate Fellow of the American Medical Association; formerly dean and professor of anatomy, and associate professor of surgery, West China Union University, College of Medicine and Dentistry, Chengtu, Szechwan, West China; a medical missionary of the American Baptist Foreign Mission Society; fellow of the American College of Surgeons; translated various books into chinese; aged 65; died, Nov. 11, 1939, in Boston of coronary thrombosis.

Edwin Bosworth McCready, Pittsburgh; Medico-Chirurgical College of Philadelphia, 1903; member of the Medical Society of the State of Pennsylvania and of the American Psychiatric Association and fellow of the American College of Physicians; past president of the American Therapeutic Society; for many years director of the mental health division of the Juvenile Court; on the staff as examining psychiatrist at the Pittsburgh City Home and Hospitals, Mayview, Pa., and the Thorn Hill School for Boys; aged 59; died, Nov. 3, 1939, of coronary occlusion.

John Conover Clayton, Freehold, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1907; member of the Medical Society of New Jersey; fellow of the American College of Physicians; served during the World War; past president and secretary of the Monmouth County Medical Society; on the staff of the Fitkin Hospital, Neptune; aged 57; died, Nov. 25, 1939, in the Princeton (N. J.) Hospital, of coronary thrombosis.

Joseph Edmond Dube, Montreal, Que., Canada; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1894; Université de Paris Faculté de Médecine, France, 1896; emeritus professor of clinical medicine, University of Montreal Faculty of Medicine; fellow of the American College of Physicians; on the staff of the Hotel-Dieu de St. Joseph; aged 71; died, Nov. 25, 1939.

Walter Lett Hackett, Detroit; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1910; Detroit College of Medicine, 1913; member of the Michigan State Medical Society; fellow of the American College of Surgeons; past president of the Detroit Academy of Surgeons; aged 58; on the staff of St. Mary's Hospital, where he died, Nov. 4, 1939, of cerebral thrombosis.

William Ebenezer Brown ● Cedar Rapids, Iowa; Bennett Medical College, Chicago, 1911; member of the Central Association of Obstetricians and Gynecologists; fellow of the American College of Surgeons; veteran of the Spanish-American and World wars; on the staff of St. Luke's Hospital; aged 59; died, Nov. 21, 1939, of lobar pneumonia type XVIII.

Frank Miles Keefe ● Clinton, Iowa; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; served during the World War; district surgeon for the Chicago and Northwestern Railway; aged 60; chief surgeon on the staff of St. Joseph's Mercy Hospital, where he died, Nov. 9, 1939, of an inoperable brain tumor.

Alfred Freeman McAlpine ● Providence, R. I.; Tufts College Medical School, Boston, 1918; fellow of the American College of Surgeons; on the staffs of the Charles V. Chapin Hospital, Rhode Island Hospital and the Jane Brown Memorial Hospital; aged 46; died, Nov. 9, 1939, in Somerville, Mass., of an injury received in an automobile accident.

Edward Bangs Hallett ● Gloucester, Mass.; Dartmouth Medical School, Hanover, N. H., 1887; formerly member of the school committee and board of health; at one time physician in the U. S. Public Health Service; aged 75; on the staff of the Addison Gilbert Hospital, where he died, Nov. 8, 1939, of pulmonary embolus and hypertrophy of the prostate.

Herbert Wilcox Knight, Bostic, N. C.; Baltimore Medical College, 1903; member of the Medical Society of the State of North Carolina; at one time a medical missionary; formerly superintendent of the Flint Goodridge Hospital, New Orleans; aged 66; died, Nov. 4, 1939, in the Rutherford (N. C.) Hospital of chronic myocarditis.

Charles Moline ● Sunderland, Mass.; Harvard Medical School, Boston, 1903; secretary of the Franklin District Medical Society; served during the World War; for many years member of the school committee and school physician; on the staff of the Franklin County Public Hospital, Greenfield; aged 62; died, Nov. 15, 1939.

Josiah S. Matthews, Denmark, S. C.; Medical College of the State of South Carolina, Charleston, 1900; member of the South Carolina Medical Association; member and past president of the state board of medical examiners; for many years member and chairman of the school board; aged 64; died, Nov. 16, 1939.

Willard Cyrus Stoner ● Cleveland; University of Wooster Medical Department, Cleveland, 1906; fellow of the American College of Physicians; served during the World War; medical consultant and formerly director of the medical division of St. Luke's Hospital; aged 62; died, Nov. 11, 1939, of bronchopneumonia.

Albert Fremont Barfoot ● Decorah, Iowa; State University of Iowa College of Medicine, Iowa City, 1886; Jefferson Medical College of Philadelphia, 1887; past president of the Winneshiek County Medical Society; aged 77; on the staff of the Decorah Hospital, where he died, Nov. 20, 1939.

Paul Otto Mahr Andreas, Jersey City, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1914; member of the Medical Society of New Jersey; served during the World War; on the staff of the Greenville Hospital; aged 50; died, Nov. 28, 1939, of coronary occlusion.

David McDonald Hackwell ● Holland, N. Y.; University of Buffalo School of Medicine, 1920; for many years health officer of the towns of Holland and Sardinia; aged 46; died, Nov. 9, 1939, in the Mercy Hospital, Buffalo, of injuries received in an automobile accident.

Winfield Grant McDeed ● Houston, Texas; Northwestern University Medical School, Chicago, 1904; member of the Radiological Society of North America and the American College of Radiology; on the staff of St. Joseph's Infirmary; aged 60; died, Nov. 30, 1939.

John Joseph Miniter, North Haven, Conn.; Georgetown University School of Medicine, Washington, D. C., 1930; member of the Connecticut State Medical Society; on the staffs of the Grace and St. Raphael's hospitals; aged 36; died suddenly, Nov. 4, 1939.

Michael William Harrington ● Indian Orchard, Mass.; Baltimore Medical College, 1901; formerly bank president and school physician; past president of the Hampden District Medical Society; on the staff of the Mercy Hospital, Springfield; aged 66; died, Nov. 13, 1939.

Jacob Grant Herchelroth, Philadelphia; Medico-Chirurgical College of Philadelphia, 1894; member of the Medical Society of the State of Pennsylvania; aged 73; died, Nov. 8, 1939, in the Methodist Hospital of injuries received when he was struck by an automobile.

Horace Cook Holbrook, Salt Lake City; Medico-Chirurgical College of Philadelphia, 1906; member of the Utah State Medical Association; aged 58; on the staff of the Dr. W. H. Groves Latter Day Saints Hospital, where he died, Nov. 8, 1939.

George N. Bilby, Alva, Okla.; Louisville (Ky.) Medical College, 1894; formerly state health commissioner; served during the World War; aged 71; died, Nov. 26, 1939, in the Veterans Administration Facility, Hines, Ill., of mixed cell sarcoma.

Jacob Meyer Epstein, St. Louis; Washington University School of Medicine, St. Louis, 1893; served during the World War; aged 67; died, Nov. 22, 1939, in the Veterans Administration Facility, Jefferson Barracks, of arteriosclerosis and heart disease.

Wallace Norman Rehfuss, Bridgewater, N. S., Canada; McGill University Faculty of Medicine, Montreal, Que., 1903; fellow of the American College of Surgeons; past president of the Medical Society of Nova Scotia; died, Nov. 5, 1939.

John Ralph Marquis, Kemmerer, Wyo.; Nebraska College of Medicine, Lincoln, 1909; mayor of Kemmerer; chairman of the county board of commissioners; aged 61; was killed, Nov. 18, 1939, in an automobile accident.

Amos Keeler Du Bell, Philadelphia; Medico-Chirurgical College of Philadelphia, 1899; served during the World War; aged 62; died, Nov. 27, 1939, in the Philadelphia General Hospital of hypertension and cardiovascular disease.

Robert Ray Roth, Camden, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1899; served during the World War; aged 64; died, Nov. 22, 1939, in the West Jersey Homeopathic Hospital of coronary embolism.

Roland Bert Taber ● Benton Harbor, Mich.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1900; aged 66; died, Nov. 19, 1939, of carcinoma of the prostate with metastasis.

Daniel R. Hill, Joplin, Mo.; Ensworth Medical College, St. Joseph, 1893; member of the Missouri State Medical Association; formerly health officer; aged 74; died, Nov. 28, 1939, in St. John's Hospital of heart disease.

Austen Micklem, Rockfish, Va.; Medical College of Virginia, Richmond, 1891; member of the Medical Society of Virginia; aged 81; died, Nov. 23, 1939, in a hospital at Charlottesville, of coronary thrombosis.

John M. Allhands, Cliffside, N. C.; Chicago College of Medicine and Surgery, 1910; for many years member of the county board of health; aged 71; died, Nov. 19, 1939, of chronic myocarditis and hemiplegia.

Jose Paulo Lobo ● Providence, R. I.; Universidade de Lisboa Faculdade de Medicina, Portugal, 1900; aged 61; died, Nov. 28, 1939, in the Jane Brown Hospital of hypertensive heart disease and diabetes mellitus.

Charles Francis Berry, Boston; College of Physicians and Surgeons, Boston, 1899; College of Physicians and Surgeons, Baltimore, 1910; member of the Massachusetts Medical Society; aged 68; died, Oct. 10, 1939.

Helen Evelyn Akeson-Merrill, Quincy, Mass.; Tufts College Medical School, Boston, 1927; aged 36; died, Nov. 19, 1939, in the Quincy Hospital of rheumatic fever and subacute bacterial endocarditis.

Cora Eliza Smith Eaton King, Los Angeles; Boston University School of Medicine, 1892; member of the California Medical Association; aged 72; died, Nov. 21, 1939, in the Hollywood Hospital.

Frederick Adams Woods, Rome, Italy; Harvard Medical School, Boston, 1898; formerly on the faculty of the Massachusetts Institute of Technology, Cambridge, Mass.; aged 66; died, Nov. 5, 1939.

William Howard McCafferty, Freeport, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1889; member of the Medical Society of the State of Pennsylvania; aged 80; died, Nov. 6, 1939.

James Joseph Burke, Easthampton, Mass.; Bellevue Hospital Medical College, New York, 1885; member of the Massachusetts Medical Society; aged 79; died, Nov. 16, 1939, of coronary disease.

Nicholas Lee Dudley, Goose Creek, Texas; Fort Worth School of Medicine, Medical Department of Texas Christian University, 1895; aged 73; died, Nov. 20, 1939, of coronary occlusion.

William Thomas Rowland, Arkadelphia, Ark; Vanderbilt University School of Medicine, Nashville, Tenn.; 1892; formerly member and president of the school board; aged 69; died, Nov. 26, 1939.

Franklyn Evans McClure, Cleveland; Rush Medical College, Chicago, 1903; aged 61; died, Nov. 13, 1939, in Westport, Conn., of arteriosclerosis, chronic nephritis and bronchial asthma.

Alonzo Newell Callaway, Tyler, Texas; University of Louisville (Ky.) Medical Department, 1907; member of the State Medical Association of Texas; aged 63; died, Nov. 24, 1939.

George J. E. Sponseller ● Martinsburg, W. Va.; University of Louisville (Ky.) Medical Department, 1894; on the staff of the King's Daughters' Hospital; aged 66; died, Nov. 12, 1939.

John Adolphus Phipps ● Scottsbluff, Neb.; St. Louis University School of Medicine, 1926; aged 37; died, Nov. 26, 1939, in the Mercy Hospital, Denver, of cerebral embolism.

Stephen R. Mitchell, Pineview, Ga.; Southern Medical College, Atlanta, 1887; member of the Medical Association of Georgia; aged 84; died, Nov. 5, 1939, of heart disease.

William S. Cary, Rogue River, Ore.; Missouri Medical College, St. Louis, 1885; aged 80; died, Nov. 1, 1939, of a ruptured appendix, peritonitis and pulmonary embolism.

William Richard Orr, Bryant Station, Tenn.; Vanderbilt University School of Medicine, Nashville, 1885; at one time postmaster; aged 78; died, Nov. 3, 1939, of myocarditis.

Ernest F. Salter, Banks, Ala.; University of Tennessee Medical Department, Nashville, 1898; aged 69; died, Nov. 30, 1939, in a hospital at Troy of myocarditis and influenza.

Frank Taylor Cary, Inglewood, Calif.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; aged 60; died, Nov. 4, 1939.

L. G. Edmond Grignon, Ste. Agathe des Monts, Que., Canada; Victoria University Medical Department, Coburg, Ont., Canada, 1885; aged 78; died, Oct. 29, 1939.

Hubert Hayward, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1937; intern at the Toronto General Hospital; aged 27; died, Nov. 29, 1939.

Erwin R. Eaton, Crown Point, N. Y.; New York Homeopathic Medical College, New York, 1882; health officer of Crown Point since 1896; aged 84; died, Nov. 21, 1939.

Henry Milus Gay ● Pasadena, Calif.; Hahnemann Medical College and Hospital of Philadelphia, 1899; aged 66; died, Nov. 6, 1939, of coronary thrombosis.

Joseph Jordan, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1900; served during the World War; aged 61; died, Nov. 28, 1939.

Daniel Edward Bottorf, Ashtabula, Ohio; Homeopathic Hospital College, Cleveland, 1881; aged 84; died, Nov. 26, 1939, of carcinoma of the prostate.

Howard Milton Kuehner ● Philadelphia; Medico-Chirurgical College of Philadelphia, 1906; aged 55; died, Nov. 26, 1939, in the Episcopal Hospital.

Arthur Leslie Bartlett, Spalding, Neb.; University of Nebraska College of Medicine, Omaha, 1903; aged 59; died, Oct. 25, 1939, of hepatic sclerosis.

Wil Turney Williams, Beaumont, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1892; aged 70; died, Nov. 30, 1939, in Houston.

James A. Logan, Cambridge Springs, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1889; bank president; aged 72; died, Nov. 16, 1939.

Joseph Antoine Langis, Tracadie, N. B., Canada; Victoria University Medical Department, Coburg, Ont., Canada, 1888; aged 78; died in October 1939.

Charles Gordon Cox, Saskatoon, Sask., Canada; McGill University Faculty of Medicine, Montreal, Que., 1909; aged 54; died, Oct. 25, 1939.

Stanley Theobald Monahan, Hudson, Pa.; Jefferson Medical College of Philadelphia, 1920; aged 43; died, Nov. 4, 1939, in Wilkes-Barre.

James Alvin Jefferson, Des Moines, Iowa; Milwaukee Medical College, 1911; aged 68; died in November 1939 of chronic myocarditis.

David Croal McKenzie, Fort Frances, Ont., Canada; University of Toronto Faculty of Medicine, 1896; aged 64; died, Oct. 21, 1939.

John Alfred Heim ● New York; Cornell University Medical College, New York, 1905; aged 56; died, Nov. 17, 1939, of cancer.

Langdon Caskin, Strafford, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1893; aged 70; died, Nov. 21, 1939.

John H. Metcalfe, Louisville, Ky.; Louisville Medical College, 1892; aged 74; died, Nov. 27, 1939, of arteriosclerotic heart disease.

Louis David Chapman, Windsor, Ont., Canada; Western University Faculty of Medicine, London, 1914; aged 58; died, Oct. 17, 1939.

Angus William McPherson, Peterborough, Ont., Canada; University of Toronto Faculty of Medicine, 1907; died, Nov. 19, 1939.

Ben B. Marr, Langley Prairie, B. C., Canada; Tufts College Medical School, Boston, 1907; aged 57; died, Oct. 14, 1939.

James J. Kennedy, Philadelphia; Medico-Chirurgical College of Philadelphia, 1905; aged 54; died, Nov. 16, 1939.

Abraham Beery, Columbus, Ohio; Fort Wayne College of Medicine, 1881; aged 86; died, Nov. 8, 1939, of senility.

William Albert Gray, Smiths Falls, Ont., Canada; Trinity Medical College, Toronto, 1890; died, Nov. 10, 1939.

Victor Kutchin, Green Lake, Wis.; Rush Medical College, Chicago, 1886; aged 88; died, Nov. 22, 1939.

John Gray Jones, Indianapolis; Miami Medical College, Cincinnati, 1872; aged 90; died, Nov. 23, 1939.

CORRECTION

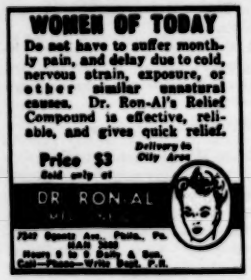
Dr. Charles N. Davis of Philadelphia was a member of the American Dermatological Association instead of the American Laryngological Association as mentioned in his obituary in THE JOURNAL, Dec. 23, 1939, page 2338.

Bureau of Investigation

A "FEMALE REGULATOR" BUSINESS DECLARED FRAUDULENT.

"Dr. Ron-Al" Scheme Debarred from Mails.

A glance through cheap periodicals which accept all sorts of questionable advertising shows that there is hardly any type of nostrum more widely promoted than the "female regulator." Often the "come-on" is but thinly disguised publicity for a contraceptive; sometimes the product is played up chiefly for menstrual irregularities. Presumably on the theory that many women may hesitate to ask for either type of preparation over the drugstore counter, the exploiter usually advertises that his "treatment" will be sent by mail and usually adds "in a plain sealed wrapper" so that no outsider may suspect the nature of the contents. Also it is not an uncommon practice to represent either kind of nostrum as the "prescription" of a fictitiously "famous" Dr. So-and-So, who is represented as giving private and individual advice by mail.



A treatment known under the rather descriptive name "Relief Compound or Female Regulators" was sold through the mails by one Irving Safronski (or Sofronski) and his wife Ethel, of Philadelphia, who used the pretentious trade styles "Ron-Al Medicine Co." and "Dr. Ron-Al Medicine Co." Furthermore, investigation by the Post Office Department was said to reveal that, though these individuals claimed to be registered pharmacists, neither of them had any medical training, nor were any physicians connected with the enterprise.

Those credulous ones who swallowed the advertising bait and sent in an order received a box of twenty white-coated tablets, which the government chemists reported to contain oil of savin, dried iron sulfate (about 1 grain per tablet), aloe, ergotin and extracts of cotton root bark and black hellebore. Accompanying the tablets was a circular reading in part:

"Dr. RON-AL'S
FEMALE REGULATORS
Recommended
FOR SUPPRESSED MENSTRUATION
and
FOR PAINFUL MENSTRUATION
These tablets are easy to take
IRREGULAR MENSTRUATION"

According to the memorandum of Hon. Vincent M. Miles, Solicitor for the Post Office Department, when the Safronskis were cited to show cause why a fraud order should not be issued to bar their business from the mails, Irving Safronski telephoned the Post Office officials shortly before the hearing was scheduled to begin that he would be present, but he failed to appear. Later in that day he sent a message requesting permission to execute and file a stipulation promising to discontinue the business. This, however, the government refused to grant on the ground that his then current mail-order business was in itself a violation of a similar affidavit he had previously made, to abandon his "Dr. Penn's Products Company" when like charges had been brought against him for conducting a kindred mail-order scheme and selling "Pep Restorer," a product identical in composition with his present one.

The Solicitor's memorandum cited expert medical testimony showing that lapsed, delayed or absent menstruation may be due to any one of various disorders including dysfunction of the ovaries, anterior pituitary and other endocrine glands; debilitating diseases such as tuberculosis, anemia or diabetes; physical anomalies within the pelvis such as retroversion or misplacement of the womb, and congenital abnormality known as infantile uterus. It went on to show that while in rare instances irregular menstruation may be due to fright, shock, fear or minor illnesses such as colds, in these cases the normal flow is commonly restored within a few days through regular bodily processes, without resort to medication of any kind; and, further, that to treat effectively and, when possible, to overcome the complex physiologic factors to which amenorrhea and dysmenorrhea are due, careful physical examination is necessary to determine the basic cause of the condition, following which specific treatment adapted to the case is essential. (N. B. The foregoing statements do not refer, of course, to menstrual cessation due to pregnancy.—ED.)

It was shown that Safronski's "Relief Compound or Female Regulators" would act essentially as a laxative, as a slight irritant to the kidneys and as a mild stimulant to the muscles of the uterus but would be of no benefit either to disordered endocrine glands or to any other conditions responsible for menstrual troubles. In fact, the testimony went on to show that the nostrum might be harmful in that the ergotin it contained would increase cramps and pains accompanying the disorders and that the iron in the tablets, constituting the only ingredient that could be of any value whatever in the conditions named, was not present in sufficient quantity to have any medicinal worth.

Altogether, the Post Office Department found the Safronskis' business to be a scheme to defraud by mail and on June 10, 1939, a fraud order was issued against Ron-Al Medicine Co., Dr. Ron-Al Medicine Co. and their officers and agents as such, debarring them from further use of the mails.

The notorious persistence of quacks now comes into the picture. Although the mails were closed to Safronski's fraudulent business, this action did not prevent him from selling his nostrums through other channels, such as drug stores. Here, fortunately, another government agency was empowered to step in with objections to false claims that Safronski continued to make for his treatments. In June and July 1939 the Federal Trade Commission entered complaints against him and his firm names for making such claims. Though Safronski twice succeeded in getting court injunctions temporarily restraining the Commission from interfering with his operations, the Commission finally was able to issue an order on Oct. 6, 1939, against the man and his concerns to desist from his false representations.

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE.—The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding, and (6) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Anti-Firin.—Marvel Remedies Co., San Francisco. Composition: Chiefly castor oil, wintergreen and red coloring matter. Fraudulently represented as a remedy for boils.—[*N. J. 30208; June 1939.*]

Celiun.—Fredk. Newton Chemical Co., Detroit. Composition: In each tablet, aminopyrine (1.6 grains); hexamethylenamine; and phenylcinchoninic acid, equivalent to 1 grain of cinchophen. Misbranded because falsely represented as "a molecular compound and not a simple mixture," and fraudulently claimed to be "a phenomenal surprise to the medical world," "a milestone in the progress of chemistry in medicine" and a product agreeable to persons "who cannot tolerate aspirin, aminopyrine and cinchophen."—[*N. J. 30016; May 1939.*]

Earakise.—C. S. Dent & Co., Detroit. Composition: Essentially glycerin, water, chloral hydrate, carbolic acid and a small amount of opium. Fraudulently represented as a remedy for earache.—[*N. J. 30022; May 1939.*]

Oxylin Greaseless Ointment.—Evons Laboratories, Drexel Hill, Pa. Composition: Essentially small amounts of oxyquinoline sulfate, benzocaine, camphor, menthol and eucalyptol in a base of glycerin and potassium stearate. Fraudulently represented as a remedy for hay fever, sinus infection, bleeding gums, "cosmetic skin" and skin poisoning.—[*N. J. 30014; May 1939.*]

Correspondence

TREATMENT OF PNEUMONIA

To the Editor:—In THE JOURNAL Nov. 25, 1939, appears correspondence from Dr. Alvan L. Barach, New York, criticizing my clinical lecture in the panel discussion of pneumonia as "inadvertently and unfortunately misleading." Dr. Barach is a nationally known expert in the field of oxygen therapy. I agree entirely with his points pertaining to pathogenesis of anoxia and the methods of relieving it, but I disagree with his estimate of what is important in treating pneumonia.

When I made the statement that "cyanosis is the main and only important indication for oxygen therapy in pneumonia" I was aware of the fact that in severe anemia cyanosis cannot develop and that in circulatory failure cyanosis is sometimes masked by pallor. But, when either of these circumstances complicates the treatment of pneumonia, oxygen therapy is unimportant because it can do little good as compared with other measures more clearly indicated. Of the ten separate references to literature cited by Dr. Barach in his recent communication only one pertained to pneumonia, and in that one the only important indication for treatment was cyanosis.

Even though it was not his "purpose to discuss the importance of oxygen therapy in pneumonia," Dr. Barach's correspondence is useful and timely, for he points out the indications which I regarded as unimportant and, because of limited time, left out.

Dr. Barach lists so many important indications for oxygen therapy that one has little choice but to start oxygen as soon as the diagnosis is made. This would be all right if costs were nothing. Unfortunately oxygen does cost a lot, and since one of the real obstacles that stand in the way of pneumonia control is the cost of serum, undue emphasis on oxygen stands in the way of serum.

When I first came, a few years ago, to a large service where much oxygen was used, we were able to pay for serum, in large part, by using oxygen only for cyanosis, meanwhile cutting down our mortality rate. Until oxygen therapists can show actual reduction of mortality rates in controlled circumstances, they have not proved the "importance" of any indication for oxygen therapy in pneumonia.

M. A. BLANKENHORN, M.D.,
Cincinnati General Hospital.

SURGICAL PROCEDURE FOR ANGINA PECTORIS

To the Editor:—In THE JOURNAL, October 28, Dr. Rupert B. Raney advances the theory that preganglionic sympathectomy should be performed for relief of attacks of angina pectoris. In the description of his technic and in figure 4 the author indicates that all the rami communicantes entering or leaving the ganglions are severed. As it is impossible to distinguish preganglionic (white) from postganglionic (gray) rami by gross examination, it would seem that the author is actually completely severing the postganglionic as well as the preganglionic fibers.

It has been the practice of those who perform the operation of preganglionic resection to excise the intercostal nerve as it leaves the intervertebral foramen, thus insuring as far as possible ablation of the preganglionic fibers, leaving the ganglion and its emerging postganglionic fibers intact.

In his summary Raney says:

> The operation is based on the assumption that in angina pectoris the sympathetic action on the coronary vessels is reversed, because of pathologic changes occurring about the myoneural junction; i. e., sympathetic impulses in such cases produce coronary constriction.
>
> Other operations heretofore recommended in the surgical treatment of angina pectoris have given relief at the expense of postganglionic fibers or afferent fibers or both. Such postganglionic operations are subject to the same criticisms that have brought about discard of this type of operation in the surgical treatment of Raynaud's disease. Operations devised to relieve pain by the interruption of afferent pathways are only palliative measures; they remove the warning signal of an impending seizure but do not attack the patient's real trouble.
>
> The operation here described is a preganglionic operation; the major portion of the afferent mechanism is left intact and thus the warning signal is not removed; Horner's syndrome is not produced, and the efferent pathways on the operated side are almost entirely interrupted.

I have for three or four years advocated a trial of this procedure to medical students and to several cardiologists, feeling, as does Raney, that the older types of operation were incomplete. It seems to me, however, that it is the thoracic nerves proximal to the ganglionated trunk which must be ablated, including of course a section of the trunk at the lowermost point of the operation.

Before writing this, I conferred with Dr. James C. White of the Massachusetts General Hospital, whose work on the sympathetic nervous system is well known; he is in complete agreement with my statements.

Perhaps the author will be good enough to explain how he determines grossly the difference between preganglionic and postganglionic rami, since his method does not include excision of the thoracic nerves involved.

FREDERICK S. WETHERELL, M.D., Syracuse, N. Y.

[This letter was referred to Dr. Raney, who replies:]

I should like to point out that the gray rami (postganglionic fibers) which are sectioned by the operation do not in any way contribute to the nerve supply of the coronary arteries, myocardium or other involved structures; they are strictly composed of sympathetic (postganglionic) fibers to the peripheral structures for the innervation of sweat glands or somatic blood vessels. James White (The Anatomic Nervous System: Anatomy, Physiology and Surgical Treatment, New York, Macmillan Company, 1935, p. 25) states: "In contrast to the white rami which connect the central pathways in the spinal cord with the sympathetic ganglia, the gray rami carry unmyelated neurons to the peripheral structures." This quotation is also in general accord with all well known authorities on the subject. It should therefore be clear that postganglionic fibers to the coronary vessels are never found in gray rami; they either reach the coronary vessels from the sympathetic ganglions through the direct thoracic cardiac nerves or ascend in the sympathetic chain and reach the same destination through the cervical cardiac nerves; the cardiac nerves are not sectioned. Thus the contention that the operation interrupts postganglionic fibers to the coronary vessels seems to be beside the point. Perhaps I should have discussed the destination and function of the gray rami sacrificed. However, since these rami are in no way involved in coronary innervation, and since the paper was read several times before representative critical medical groups without this issue being raised, such an explanation did not seem to be necessary to the presentation of the facts of the operation itself.

Section of the thoracic nerves from the second to the fifth inclusive, as suggested by the commentator, could be expected to accomplish the preganglionic denervation of the coronary vessels as completely as the operation which I recommended, provided section is made sufficiently close to the exit of the nerves from the spinal canal to include the sympathetic preganglionic fibers. However, this naturally raises the question Is the sacrifice of the entire segmental nerve justifiable when such a sacrifice can be avoided and still accomplish the same purpose? The sacrifice of the gray rami, indicated in the illustrations of the article, are known to have no ill effects. On the other hand, section of an intercostal nerve not infrequently gives rise to severe intercostal neuralgia as well as to loss of function of the entire nerve.

R. B. RANEY, M.D., Los Angeles.

"FLUORIDE IN DRINKING WATER AND DENTAL CARIES"

To the Editor:—Lest a favorable verdict be found for the caries-preventing influence of fluoride in drinking water before sufficient evidence on the point has been accumulated, I would like to sound a note of caution. Dean and his co-workers did sound a faint warning in the report on their Illinois study (*Pub. Health Rep.* **54**:862 [May 26] 1939), and in THE JOURNAL editorial, September 16, page 1132, the reader was again cautioned that some water constituent other than fluoride might possibly be the caries-inhibiting agent. So far as human caries statistics are concerned, no greater importance can be attached to the fluorine content of drinking water than to its total hardness. In 1937 I pointed out an inverse relationship between the incidence of caries and the hardness of drinking water in some seventy-five American cities (*J. Dent. Research* **16**:417 [Oct.] 1937) and the observations of Dean and his associates bear mine out quite well. Caries was found much more prevalent among the school children of Macomb and Quincy than among those of Galesburg and Monmouth, but the latter two cities use very hard well water, with a high content of the salts of alkaline and alkaline earth metals (1,005 and 989 parts per million total fixed residue) in addition to a high fluoride content. Macomb and Quincy use river water of very low fixed residue (165 and 129 parts per million) along with a low fluoride content. In the regions of occurrence of mottled enamel and waters high in fluoride content there is always an accompanying high degree of total hardness in the drinking waters.

Evidence from studies on experimental animals does seem to indicate a fluoride protection against caries, but the case for fluoride protection in man cannot be considered closed until the fluoride effect has been completely dissociated from the complicating influence of total hardness. The statement of Cox (THE JOURNAL, November 4, p. 1753) that "the case should be regarded as proved" seems somewhat premature.

C. A. MILLS, M.D., Cincinnati.

THE DEGREE OF DOCTOR

To the Editor:—In THE JOURNAL August 26, page 876, I read a piece of correspondence entitled "The Degree of Doctor," written by Frederick Juchhoff, LL.M., Ph.D., Chicago. I believe that, should the good doctor of philosophy investigate more thoroughly, he would find that he has been a little unfair to a young profession with growing pains whose wholehearted end purpose is to conform in every respect to the ideals of the mother profession of medicine, to which it wishes to be considered a distinct branch.

We in this profession have endeavored each year through our council of education for chiropody colleges of our national association to increase and improve the training of the chiropodist. Investigation will prove that we have done this more thoroughly and more rapidly than any of the branches of medicine has in the past, not with any hope or intention of becoming something we are not but to improve what we already are. Few chiropodists desire to be anything more than what they are but they do wish to be better equipped to serve humanity in their small way, much as the dentist does in his work. It is with this thought in mind that I repeat We do not wish to be M.D.'s. If we did we would take a complete medical course, fitting ourselves for this work and earning our degree.

We wish sincerely to be educated, scientific doctors of surgical chiropody, limiting our work entirely to the feet as the dentist has to the teeth. The work beyond this scope is and should be the field of the orthopedic surgeon or general practitioner. If there are any chiropodists who would like to become M.D.'s and increase their field they must enter a class A medical school, study, work and earn the privilege.

As president of the midwestern sixteen states and member of the Iowa state board of examiners in our field, I feel that I am in a position to know that as a group we honor and respect medical doctors and do not wish to encroach on their work. We feel that complete knowledge in our field entitles us to the degree D.S.C. just as the degree D.D.S. is given the dentist, the D.D. the religious man, the Ph.D. the educator. After all, this is a mark of distinction and honor in each particular field and one degree has no direct connection to another. I trust that this will create a better understanding all around.

CHESTER H. FINDLEY, D.S.C., Davenport, Iowa.

NOTE.—With the efforts of an interested and active group of chiropodists to keep the practice of chiropody within its proper field, to elevate the standard of practice and to limit practice to qualified persons, all must sympathize. A collegiate degree, such as "doctor of chiropody," however, contributes nothing toward any of those ends. That seems to be the trend of Dr. Juchhoff's argument. As long as law does not define the minimum qualifications that a candidate for a degree must possess and forbids the conferring of a degree on any person not so qualified, any degree proves nothing as to the fitness of the holder—except possibly the traditional degrees of medicine and law. In the absence of such legally enforced standards, a board whose duty it is to license chiropodists and to regulate the practice of chiropody will do better to base its action on an exact knowledge of the nature and extent of the candidate's preparation for the pursuit of his calling, without insisting too strongly on the possession of a collegiate degree.—ED.

THE POWER OF SURVIVAL

To the Editor:—Merely for the record I report the following case: An abandoned baby girl was found in an alley on a garbage pile the morning of Nov. 30, 1939. This 7 or 7½ month baby, weighing 2½ pounds (1,134 Gm.), delivered by an abortion performed about 7 p. m., November 29, was kept in a shoe box on a back porch all night and the next morning offered to a janitor to burn but he refused. The baby was then taken out of the box and wrapped in a piece of newspaper and placed in the alley.

The temperature was around 30 F. I was called by the police and took the baby to my office. After I worked on the baby for an hour and a half she was resuscitated. I called for a pulmotor and an incubator, but no oxygen was used. The baby was sent to Michael Reese Hospital, where she is now and is gradually gaining.

A. L'AVNIRE LUCAS, M.D., Chicago.

THE PRIVATE PRACTITIONER AND PREVENTIVE MEDICINE

To the Editor:—It is generally admitted that the private practitioner is not doing as much as he should do in promoting preventive medicine. For that reason public health agencies have had to take over vaccination and other programs even for those who can pay, because the work would not otherwise be done. I believe this is largely due to the lack of a proper approach to the problem in teaching undergraduates. I believe that every student should be taught to ask the routine question in history taking "What diseases have you been protected against by vaccination and when?" Furthermore, this should not be a mere ritual of recording but something should be done with the answer. That something should take the form of requiring students to render a dual diagnosis in every case (except when the patient is too sick to stand routine questioning)—a clinical diagnosis and a public health diagnosis. An example of the latter is "needs typhoid vaccination" or "needs smallpox vaccination"

or, in the case of a child "needs toxoid." If nothing is needed, that fact should be recorded as "public health diagnosis negative." This would instil into the mind of every student a public health approach and make him the important unit in promoting preventive medicine, which he should be but all too often is not.

Frederick R. Taylor, M.D., High Point, N. C.

Queries and Minor Notes

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

FLUOROSCOPY IN DIAGNOSIS OF MINIMAL TUBERCULOSIS

To the Editor:—In this locality emphasis is being given to the value of fluoroscopic examination in detecting cases of minimal tuberculosis. Will you kindly inform me as to the reliability of this examination in such cases.

M.D., Philippine Islands.

Answer.—In recent years a good deal of work has been done to evaluate the fluoroscopic examination in chest disease. A. C. Reid (*Am. Rev. Tuberc.* **20**:46 [July] 1929; *Am. J. M. Sc.* **188**:178 [Aug.] 1934; *New York State J. Med.* **31**:337 [March 15] 1931), H. H. Fellows (*Am. J. M. Sc.* **188**:533 [Oct.] 1934; *Am. J. Pub. Health* **25**:109 [Feb.] 1935) and H. H. Fellows and W. H. Ordway (*Am. Rev. Tuberc.* **17**:201 [March] 1928) have used the fluoroscope extensively and have found it much more valuable than the physical examination in the detection of pulmonary lesions. However, they did not employ roentgenograms of the chest as a routine to determine how many lesions the films would bring to light which the fluoroscope had failed to reveal.

H. W. Hetherington and E. W. Flahiff (*Am. Rev. Tuberc.* **37**:71 [Jan.] 1933) used the fluoroscope and stereoscopic films in the examination of 347 persons, with the result that with the fluoroscope they frequently failed to detect pulmonary lesions located above the clavicle.

R. E. Boynton, H. S. Diehl and C. E. Shepard (*Am. Rev. Tuberc.* **37**:49 [Jan.] 1938) reported observations on 5,000 university students, using the physical and fluoroscopic examinations on all and x-ray films of the chests of the tuberculin reactors. They found that the fluoroscopic examination detected evidence of the disease in three fourths of the cases with minimal and moderately advanced involvement and in all of the cases of far advanced pulmonary tuberculosis.

Some physicians state that they are able to detect 95 per cent of significant pulmonary lesions by fluoroscopic examination. Obviously the 5 per cent which they fail to find are minimal lesions, and as in most groups of cases reported not more than 10 to 20 per cent of the lesions found are in the minimal stage, it would appear that the fluoroscopic examination fails to reveal a high percentage of the lesions in this stage.

The x-ray film also fails to reveal any lesions that are not macroscopic in size and some which are. However, it is the general consensus that it is superior to the fluoroscopic examination.

With a special x-ray unit, R. H. Stiehm (*Journal-Lancet* **59**:122 [April] 1939) has done some work which promises to place the fluoroscopic examination on a par with or possibly above the x-ray film in the detection of small lesions. He has discovered minimal lesions with this special unit which were entirely overlooked even on stereoscopic films. He has the advantage of being able to rotate the chest so as to visualize parts that are not clearly seen on an ordinary postero-anterior exposure either with single or with stereoscopic films. When the patient is in the position in which the examiner visualizes the shadow, he makes a small film with an attachment to the fluoroscope.

It must be clearly understood that the shadow seen on fluoroscopic examination does not constitute a diagnosis. This is also true of the x-ray film. One must avoid the error of visualizing a shadow with the fluoroscope and making a film as the final step in diagnosis. These methods only locate the lesion, after which its etiology must be determined by laboratory and clinical examination and often with serial x-ray film or fluoroscopic examinations over a considerable time.

MONGOLISM AND FERTILITY

To the Editor:—Will you please discuss the question of whether or not "mongolians" are sterile, and, if not sterile, the advisability of sterilization.

M.D., Oregon.

Answer.—Down, who first described mongolism in 1866, found that his patients rarely lived to puberty, usually dying of tuberculosis at an early age. He felt, moreover, that tuberculosis was probably the hereditary origin of the degeneracy. In recent years improved hygiene has allowed the mongoloid to live past the age of puberty, and the expectation of life has extended into the third or even the fourth decade. Potency in the male and the ability to bear children in the female are therefore a medical problem today. Few data have been available until recent times.

An extensive investigation, reports of which have partly been published, by Clemens E. Benda at the Wrentham State School, Wrentham, Mass., discloses the following facts: About half of the mongoloid girls above the age of 15 do not menstruate and the other half menstruate most irregularly. None of the girls under observation have ever become fertilized and they do not show sexual activity. Pregnancy in the mongoloid, therefore, is practically impossible. No authentic case has ever been reported. The ovaries of mongoloid girls, moreover, at the age of about 10 years show degeneration and from their appearance one would judge that these ovaries would never function.

Male mongoloids are probably not capable of impregnating a female. There is no definite case reported of a mongoloid doing so. Autopsies, moreover, on three males aged respectively 16, 21 and 30 years failed to reveal any spermatozoa. The testicles also were hypoplastic and degenerated. Some mongoloids may have strong sexual tendencies and perversions, but it has not been demonstrated that any are capable of fertilization.

Mongoloids who are idiots or imbeciles do not need sterilization. A few mongoloids who are on the borderline and live outside an institution might possibly need to be sterilized. The chances of a male mongoloid being potent, however, are minimal. Whether to sterilize or not would depend on the sexual activity of the individual and the chances of his impregnating a female.

References:

Down, J. L. H.: Observations on an Ethnic Classification of Idiots, Clinical Lectures and Reports, *London Hosp.* **3**: 259-262, 1866.
Benda, C. E.: Studies in Mongolism: Growth and Physical Development, *Arch. Neurol. & Psychiat.*, **41**:83-97 (Jan.) 1939; correction **41**:378 (Feb.) 1939. Studies in Mongolism; Thyroid Gland, *ibid.* **41**:243-259 (Feb.) 1939. Also personal communication.

WHOLE BLOOD IN GASTROINTESTINAL TRACT

To the Editor:—Why is whole blood, when swallowed as in hemorrhage of the upper gastrointestinal tract, so irritating and why does it usually initiate nausea and vomiting? Is whole blood ever digested in part or does it pass through the gastrointestinal tract unchanged? If salt is added to whole blood does it alter its digestibility? If whole blood is defibrinated, preventing its coagulation, can part of the food value of blood be utilized?

Walter W. Busby, M.D., Milwaukee.

Answer.—There is no reason why either swallowing whole blood or having free blood in the upper gastrointestinal tract should cause nausea and vomiting; however, the condition which causes blood to be swallowed or free in the upper gastrointestinal tract is quite likely to cause nausea and vomiting. Whole blood either laked or coagulated is not irritating to the stomach. According to Best and Taylor (Physiological Basis of Medical Practice, Baltimore, Williams & Wilkins Company, 1939, p. 829), the sensation of nausea is felt in the back of the throat or the pit of the stomach and in its milder degrees is merely a "sinking" sensation in the epigastrium. Increased tension on the walls of the stomach or duodenum is a potent cause of the sensation. Nauseating odors cause the lower border of the stomach to descend an inch or two, as a result evidently of sudden relaxation of the abdominal muscles. This movement would tend to stretch the esophagus and gastric walls and so exert tension on the nerve fibers. Vomiting, according to the same authorities (page 782), involves the coordinated actions of the muscles of the stomach, esophagus and abdominal wall. The act may also be associated with antiperistaltic movements in the intestine. The muscular mechanisms are governed by a center in the medulla which discharges impulses along numerous efferent nerves and may be influenced by afferent impulses arising in the stomach, in other viscera or in almost any region of the body.

Yes, whole blood may be digested in part and also pass through the gastrointestinal tract unchanged. When blood reaches the gastrointestinal tract it is still composed of red and white cells and serum, with vitamins and minerals. Should the mediums which it goes into cause the red blood cells to be broken, the hemoglobin will be dealt with as the hemoglobin of any other source (such as from meat). Should the proteins

of the serum be coagulated and gather the cells of the free blood into a mass, it will serve also as a source of unhydrolyzed fat, protein and carbohydrate. The motility of the gastrointestinal tract will regulate the length of time that the blood will be in contact with the digestive ferments; thus the longer the contact the more blood is digested. If salt is added, it might help by causing the red cells to break and lose their hemoglobin, or it might help also by stabilizing the electrolytic balance of the blood if there is a deficiency in blood chlorides.

Yes, whole blood can be utilized, whether defibrinated or not.

COMBINED EXTRA-UTERINE AND INTRA-UTERINE PREGNANCY

To the Editor:—I would appreciate any information concerning the frequency of a normal uterine pregnancy accompanied at the same time by a tubal pregnancy. I have a patient at the present time on whom I operated in June for a left tubal pregnancy of approximately six or eight weeks' duration, who was also pregnant in the uterus. She is progressing normally and expects to deliver next month.

Philip S. Joseph, M.D., Alice, Texas.

ANSWER.—Combined extra-uterine and intra-uterine pregnancy is not exceptionally rare; 213 cases were collected in 1933 by A. A. Gemmell and H. L. Murray (*J. Obst. & Gynaec. Brit. Emp.* **40**:67 [Feb.] 1933), and many have since been reported. Double tubal gestation has been observed, also two gestation sacs in one tube. Twins and even triplets (Baldwin) have been found in one sac. Foetus papyraceus may also occur in combined gestations as well as in twin ectopic gestation.

Extra-uterine and intra-uterine pregnancy offers a serious prognosis. Abortion of the uterine ovum precedes or follows the rupture of the ectopic sac, but death from internal hemorrhage may occur before abortion takes place. Rarely the woman goes to term and then labor is usually spontaneous, but death frequently follows from internal hemorrhage or sepsis starting from the abdominal mass. The extra-uterine fetus rarely obstructs the passage of the intra-uterine fetus. If the ectopic pregnancy is successfully terminated, the patient may go to term with the other normally. Both fetuses may be delivered alive at term.

REFRIGERATION AND MALIGNANCY

To the Editor:—Will you kindly answer the following questions, which will be of material assistance to me: 1. Have those persons whose experience permits an expression of opinion been led to believe that cryotherapy is a progressive step and will find a permanent place in the treatment of cancer? 2. Are there enough data on record at this time for one to believe that the results are favorable and permanent or unfavorable and temporary? 3. Is pain relieved in the advanced stages of cancer? 4. Roughly, about how many patients have been treated and what is the longest time they have been under professional and expert observation? 5. Is there a favorable, unfavorable or noncommittal reaction toward cryotherapy on the part of the experts in the field of physical therapy?

Herbert W. Hafey, M.D., New Brunswick, N. J.

ANSWER.—1. There is no assurance that refrigeration will find a permanent place in the treatment of cancer, but there is continued clinical and biopsy evidence that sustained temperatures of around 40 to 50 F. produce regressive changes in certain highly undifferentiated cells of cancer type. The growth is retarded when temperature can be maintained at 90 F. or below, and regressive changes are seen when refrigeration periods have extended seventy-two hours or longer (Smith, L. W., and Fay, Temple: Temperature Factors in Cancer and Embryonal Cell Growth, THE JOURNAL, Aug. 19, 1939, p. 653).

2. As general refrigeration is hardly more than a year old, permanent or favorable results cannot be presented. With combined local and general measures of refrigeration, eighteen months of clearance of tissue from active carcinoma is the longest observation so far recorded.

3. Pain has been relieved when twenty-four hours of generalized refrigeration has been applied and even when local refrigeration has been administered. This benefit from the method may find a permanent place in the treatment of advanced painful conditions, including cancer.

4. This cannot be definitely answered. In one series more than seventy patients were treated and more than a hundred refrigeration inductions observed. The longest period of observation in the field of reduced temperature has been twenty-five months.

5. The work is too new to justify conclusions and as yet has not been paralleled with animal experimentation although carefully checked by tissue culture, biopsy and embryonal studies. The procedure of refrigeration should be carried out only in recognized hospitals with full and proper equipment and a special nursing staff familiar with the details of the problem.

HOME CANNING AND SACCHARIN

To the Editor:—Please give me information concerning preserving fruits for diabetic patients. Can fruits be preserved by putting them in saccharin?

Alvin C. Poweloit, M.D., Newport, Ky.

ANSWER.—According to the Farmer's Bulletin 1762, United States Department of Agriculture, "Home Canning of Fruits, Vegetables and Meats," fruits may be successfully canned in the home with or without the addition of sugar. Juicy fruits such as berries, cherries, currants and plums are best canned in their own juices without the addition of water when sugar is omitted. The less juicy fruits such as apples, peaches and pears when canned without sugar may require the addition of some water. Detailed directions for canning fruits without sugar may be found in the bulletin referred to. Saccharin is sometimes suggested as a substitute for sugar in home canned fruit. The consensus of various investigations, including those of the Referee Board, is that saccharin in the amounts ordinarily used in foods does not produce demonstrably harmful effects even when continued over a long period. However, there is some evidence that larger quantities may produce minor derangements, which might become more accentuated in pathologic conditions. Since saccharin is unnecessary for the successful preservation of fruit, its indiscriminate use in home canning is not to be recommended.

TREATMENT OF MULTIPLE SCLEROSIS

To the Editor:—Please comment on the later developments in the treatment of multiple sclerosis in the early stages. I am particularly interested in the intraspinal injections of vitamin B_1 as described by Stern in the *American Journal of Surgery* (**29**:495 [March] 1938) and in liver therapy as advocated by Gendell and Slater in the *Edinburgh Medical Journal* (**43**:360 [June] 1936).

E. S. Watson, M.D., Estelline, S. D.

ANSWER.—No treatment for multiple sclerosis at any stage has stood the test of time. The optimism voiced by those reporting certain methods has frequently been due, it may be suspected, to the occurrence of spontaneous remissions at the time of treatment. The usefulness of liver extract in multiple sclerosis according to Dattner (*Wien. Klin. Wchnschr.* **50**:87 [Jan. 22] 1937) is explained by the frequent deficiencies in gastric secretion in this disease, and, if so, the cord changes to some extent may be considered analogous to those of the combined degeneration of pernicious anemia. The use of vitamins, especially B_1, by intravenous or intramuscular injection is now much in vogue but it is too early to appraise results. A Swedish observer, Grewin (*Acta psychiat. et neurol.* **14**:285, 1939), noted "slight or no improvement in chronic cases." It is true that Stern was fortunate enough to have no fatality in connection with 200 intraspinal injections but past experience with intraspinal therapy for other conditions calls for caution, and it has not been proved that more vitamin enters the nervous tissue by this method than by the intravenous one. More drastic methods, such as cervical sympathectomy, electropyrexia and other methods of fever therapy, have also failed to produce satisfactory results in most cases. New methods continue to be reported. Thus, Stransky (*Monatschr. f. Psychiat. u. Neurol.* **98**:237 [June-July] 1938), because few people over 50 years of age have the disease, advocates the intramuscular or intravenous injection of serum of healthy persons past 50. In an early case rest is probably most important, and intravenous injection of such arsenicals as sodium cacodylate or silver arsphenamine as well as of vitamin B_1 is probably of some value.

ROENTGEN THERAPY FOR ASTHMA

To the Editor:—Has roentgen treatment been used for the relief of asthma, and if so with what result? Information as to how it is used would be interesting.

Orville Rockwell, M.D., Sunnyside, Wash.

ANSWER.—Roentgen treatment of asthma has been employed for many years, and numerous articles on the subject have been published. The results are fair in a small percentage of cases and the effects are usually temporary, lasting from a few weeks to a few months. Since specific (allergic) management yields a much greater return of benefit in an average group of cases of asthma, nonspecific therapy such as roentgen treatment should be limited to cases in which no results are obtained by the usual methods. According to one author (Feinberg, S. M.: Allergy in General Practice, Philadelphia, Lea & Febiger, 1934), the patients selected for this treatment are particularly those who have considerable enlargement of the hilus gland or those who have had their asthma occurring closely after pneumonia or influenza.

Varied technics in treatment have been used. Thus, at the Mayo Clinic (Maytum, C. K., and Leddy, E. T.: Roentgen

Treatment of Asthma, *J. Allergy* **10**:135 [Jan.] 1939) anterior and posterior fields over the mediastinum are treated on two consecutive days. The treatment utilizes 135 kilovolts, a 6 mm. aluminum filter, a focal distance of 40 cm., 5 milliamperes and a twenty-five minute period. This constitutes 500 roentgens. Only 6 per cent of the patients with asthma were treated by roentgen rays, and of these 24 per cent obtained relief. Another technic that is worth consideration (McEachern, J. M.: X-Ray Therapy in Bronchial Asthma, *Canad. M. A. J.* **37**:573 [Dec.] 1937) fractionates the doses. Treatment is given over the posterior mediastinum. The latter is divided into upper and lower ports measuring 15 by 15 cm. Each port receives a total of 500 roentgens, with doses of 100 roentgens a day to alternate ports (180 kilovolts; filter, 0.25 mm. of copper plus 1 mm. of aluminum; focal distance, 40 cm.; 8 milliamperes; total, 100 roentgens). The treatments cover a period of ten days. McEachern reported that 84 per cent of twenty-five patients showed improvement.

It should be emphasized that such treatments should be undertaken only by one who is well experienced in roentgen therapy, and then only after serious efforts with the usual procedures in the management of asthma have failed to yield results.

LOCAL REACTION FROM VACCINE

To the Editor:—I am working with toxin vaccine. I will not trouble you with the ordinary reactions. What puzzles me is this: intradermal tests will give an abscess pocket, and a marked erythematous reaction locally. If given subcutaneously or intramuscularly a lytic reaction sets in with generalized chills, fever, gastric symptoms, headaches and the like. If given subcutaneously in small doses below the threshold for general symptoms, the local reaction is still lytic and absorbable within three days to two weeks. This has happened half a dozen times in about 500 cases. These lytic pockets are sterile. The following outlines the method for making toxin vaccine: 1. Seed blood agar plates with original material and incubate for twenty-four hours. 2. Fish different colonies into broth and incubate for twenty-four hours. 3. Check for purity of strains and seed each into tubes containing 20 cc. of broth. 4. Incubate for seven days at 37 C. 5. Add one drop of tricresol. Heat at 56 degrees in water-bath for from eight to ten hours. 6. Subculture into broth and incubate for twenty-four hours to check for sterility. 7. If sterile, add one drop of tricresol and transfer each to a separate 60 cc. vaccine bottle, diluting to volume with the amount of sterile saline solution necessary. (Usual dilution volume 30 cc.) This medication is given intradermally, subcutaneously and intramuscularly. Any explanation of this curious reaction would be appreciated.

M.D., Michigan.

ANSWER.—The process described suggests a local allergic reaction comparable, perhaps, to the Arthus phenomenon. The vaccines injected contain mixtures of bacterial proteins, to which some individuals might be hypersensitive. Under such circumstances injection of the protein should cause intensified local inflammation with local retention of the injected materials and accumulation of leukocytes which would predispose to dissolution of tissue. This possibility could be tested by the intradermal injection of filtrates (Berkefeld or Seitz) from a vaccine into a patient known to be hyperreactive. This would show whether soluble materials were responsible for the adverse reaction.

MESCALINE, MARIHUANA AND COCAINE

To the Editor:—With reference to Walter Bromberg's article on marihuana of recent date, I should appreciate information on the following points: 1. Do the clinical picture and the patient's subjective impressions produced by marihuana resemble those produced by mescaline? 2. Are there satisfactory laboratory tests to determine the presence of cannabis, morphine and cocaine in the blood stream or body of a living person?

Walter R. Miller, M.D., U. S. Navy.

ANSWER.—1. While mescaline may cause a change in all the special senses, the hallucinations of sight are so pronounced that many investigators consider this to be practically the only constant effect produced. It consists in the appearance of vivid and bizarre colorings of objects with constantly changing combinations. The mind is clear, and there is no narcosis or tendency to sleep. With marihuana the only visual illusion is that of enlarged space. So that, while with marihuana there are subjective aberrations of time, space and sound, with mescaline the subjective illusions are concerned with color.

2. There is at present no dependable specific test which will identify cannabis or the resinous active ingredient, cannabinol. It is doubtful whether sufficient material could be extracted from the blood with chloroform for purification and examination.

Cocaine may be extracted from blood by adding sodium bicarbonate and extracting with purified petroleum benzin. The purified petroleum benzin is then evaporated and the cocaine is identified microscopically after reaction with gold or platinum chlorides. Morphine may be extracted from alkaline blood with a mixture of alcohol and chloroform. Morphine reacts with Marme's reagent to give a characteristic crystalline structure. If there is sufficient material available, both alkaloids may be identified by the methods given in the United States Pharmacopeia.

TESTOSTERONE PROPIONATE AND AZOOSPERMIA

To the Editor:—In the issue of The Journal of Oct. 28, 1939, in answer to a query on page 1660 relative to thyroxine in hyperthyroidism, it is stated that "in a similar manner testosterone propionate may inhibit the function of the testis to the point of hypospermia." I have in several cases advocated its use in the so-called male climacteric conditions and would appreciate further information you may be able to give me in reference to the inhibition of function of the testes.

Maurice A. Sturm, M.D., Miami Beach, Fla.

ANSWER.—Testosterone propionate appears to interfere with the function of the normal testis because in doses of from 10 to 25 mg. daily it commonly causes a definite reduction in the spermatozoa count of normal men, sometimes to the point of azoospermia. The count usually returns to normal when treatment is discontinued. This means that in boys, or in men during the usual reproductive period, the testis should be stimulated to produce its own male sex hormone if it is capable of responding to stimulation, and substitution therapy with testis hormone should be used when the testis is not capable of responding adequately to stimulation. However, these considerations do not contraindicate the use of testosterone propionate for the so-called male climacteric.

WHOOPING COUGH VACCINE

To the Editor:—Patients have repeatedly come to me for pertussis vaccine for their children, and when I have told them that a series of injections were necessary and that I could not even then guarantee immunity they have stated that other doctors were giving one injection which gave immunity for life. Can you advise me as to what this vaccine is and where I can obtain it?

M.D., New York.

ANSWER.—No record of any one-injection method for the prevention of whooping cough has been found. This doubtless refers to the new "double strength" Haemophilus pertussis vaccine (1 cc. = 20 billion) authorized by Northwestern University Medical School for whooping cough prevention. It requires a total of three injections (in alternate arms); the preferred interval between injections is three weeks.

DOSE OF THYROID EXTRACT IN HYPOTHYROIDISM

To the Editor:—Given a —22 basal metabolic rate in a man aged 40, weighing 120 pounds (54 Kg.), of alert mentality ("hypothyroid state") associated with asthma, can one determine at once roughly the maximum dose of thyroid to be given in order to avoid delay in testing tolerance with cautious small doses?

J. G. Levine, M.D., Tucson, Ariz.

ANSWER.—There is no way of determining in advance what dose of thyroid any patient with hypothyroidism will require for maintenance of a normal level of metabolism. The dose varies from patient to patient even though the depression of the metabolism is the same. It is desirable to begin with an inadequate dose and increase gradually until the minimum amount is being administered that will maintain a normal level of metabolism. At least six weeks is required for adjustment to any dose, so that changes in the dose should not be made more often than this. As a rule, in a man 40 years old it is safe to begin with a dose of 0.06 Gm. (1 grain) of U. S. P. thyroid daily.

CEREBRAL HEMORRHAGE AND COMA

To the Editor:—A patient aged 65, who was in a complete coma for fourteen days following a cerebral hemorrhage associated with a right hemiplegia and who after five and one-half weeks of illness is unable to speak (just mumbles), has great difficulty in swallowing so that nasal feeding is necessary. The patient is incontinent of bladder and bowel. What is the eventual prognosis as to regaining speech, resuming the normal swallowing function, and regaining bladder and bowel control? The patient is hypotensive and has auricular fibrillation. What is the longest period of coma reported in cerebral hemorrhage followed by recovery?

M.D., New York.

ANSWER.—The eventual outcome of cerebral hemorrhage depends on the site of the ruptured artery. The usual site is the lenticulostriate or "artery of cerebral hemorrhages." On the whole the eventual outlook with a right hemiplegia, i. e. a left cerebral hemorrhage, is poor for speech and particularly motor function. Bladder and rectal control will probably clear when, and if, consciousness returns. Three months is probably the longest duration of coma or semicoma. Pneumonia is now the most probable cause of death unless a new hemorrhage occurs.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, January 6, page 82.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Medical centers having five or more candidates desiring to take the examination, Feb. 12-14. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An Affiliate of the American Board of Surgery. *Written.* Part I. Various places throughout the United States and Canada, March 28. *Oral.* Part II. New York, June 10-11. Applications must be received 60 days prior to examination. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: November 1940. *If a sufficient number of applications are received before March 1 there will be an examination at New York, June 10-11.* Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *General oral and pathologic examinations (Part II) for all candidates (Groups A and B)* will be conducted in Atlantic City, N. J., June 8-11. *Applications for admission to Group A, Part II, examinations must be on file not later than March 15.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: Oral, New York, June 8-10; Cleveland, Oct. 5. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF OTOLARYNGOLOGY: New York, June 3-5. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PATHOLOGY: New York, June 10-11. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: Kansas City, Mo., May 18, following the Region III meeting of the American Academy of Pediatrics. Seattle, June 2. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF RADIOLOGY: New York, June 7-10. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave., Rochester, Minn.

AMERICAN BOARD OF UROLOGY: Chicago, Feb. 9-11. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

Washington July Report

Mr. N. N. Vaughn reports the written examination held by the Washington State Board of Medical Examiners, at Seattle, July 10-12, 1939. The examination covered seven subjects and included seventy questions. An average of 60 per cent in each subject was required to pass. Forty-seven candidates were examined, forty-six of whom passed and one failed. Twenty-six physicians were licensed by reciprocity and ten physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists		(1939)	81.1, 83.8, 85.4, 86.1
Stanford University School of Medicine		(1939)	86.1
George Washington University School of Medicine		(1938)	85.1
Loyola University School of Medicine		(1939)	77.8
Northwestern University Medical School		(1938)	85.7, 87.* (1939) 81.7, 82.3, 83.5, 85.7, 91.1
Rush Medical College		(1933)	87, (1938) 81.4, 82, 82.7, 83
University of Illinois College of Medicine		(1935)	87
Indiana University School of Medicine		(1938)	82.2
University of Kansas School of Medicine		(1934)	88.2
University of Louisville School of Medicine		(1938)	77.8
Harvard Medical School		(1938)	84.1
St. Louis University School of Medicine		(1938)	84.5
Washington University School of Medicine		(1938)	79.7
Creighton University School of Medicine		(1937)	81.5, (1938) 84.2
University of Rochester School of Medicine		(1938)	82.4
Western Reserve University School of Medicine		(1935)	85.4*
University of Oregon Medical School		(1938)	83.1, 84.1, 84.7, 84.8, 85.1,* 86.8, 87, 87.2, 90, 92.5
University of Pennsylvania School of Medicine		(1929)	87.2
University of Toronto Faculty of Medicine		(1931)	84.8*
McGill University Faculty of Medicine		(1938)	78.2, 82.2
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin		(1926)	70.2
Magyar Királyi Pázmány Péter us Tudományegyetem Orvosi Fakultasa, Budapest		(1919)	82.4

School	FAILED	Year Grad.	Per Cent
Universität Rostock Medizinische Fakultät, Rostock		(1936)	71.8

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Medical Evangelists		(1938)	California
Stanford University School of Medicine		(1936)	California
Georgetown University School of Medicine		(1936)	Texas
Northwestern University Medical School		(1936), (1938)	California
Rush Medical College		(1938)	Oregon
State University of Iowa College of Medicine		(1932)	Iowa
University of Louisville School of Medicine		(1938, 2)	Kentucky
Johns Hopkins University School of Medicine		(1924)	Minnesota
University of Minnesota Medical School		(1930), (1938)	Minnesota
Creighton University School of Medicine		(1933) Iowa, (1938)	Nebraska
University of Nebraska College of Medicine		(1938, 2)	Nebraska
University of Oklahoma School of Medicine		(1938)	Oklahoma
University of Oregon Medical School		(1929), (1938, 2)	Oregon
Jefferson Medical College of Philadelphia		(1938)	Oregon
University of Pennsylvania School of Medicine		(1937)	Penna.
University of Tennessee College of Medicine		(1938)	Tennessee
Vanderbilt University School of Medicine		(1935)	Tennessee
University of Virginia Department of Medicine		(1938)	Virginia

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1939, 3)	N. B. M. Ex.
University of Colorado School of Medicine		(1938)	N. B. M. Ex.
Northwestern University Medical School		(1938)	N. B. M. Ex.
Rush Medical College		(1935), (1937)	N. B. M. Ex.
Washington University School of Medicine		(1926)	N. B. M. Ex.
Columbia Univ. College of Physicians and Surgeons		(1928)	N. B. M. Ex.
University of Oregon Medical School		(1934)	N. B. M. Ex.

*Licenses have not been issued.

Minnesota October Report

Dr. Julian F. Du Bois, secretary, Minnesota State Board of Medical Examiners, reports the oral and written examination held at Minneapolis, Oct. 17-19, 1939. The examination covered twelve subjects and included sixty questions. Forty-three candidates were examined, all of whom passed. Four physicians were licensed by reciprocity and one physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
George Washington University School of Medicine		(1937)	85.3
Northwestern University Medical School		(1935)	89, (1938) 86.5,* (1939) 91, 91.1
Rush Medical College		(1937)	86.3, 87, (1938) 90.5
State University of Iowa College of Medicine		(1937)	89.5
Tulane University of Louisiana School of Medicine		(1936)	82.6
Johns Hopkins University School of Medicine		(1935)	91
University of Minnesota Medical School		(1937)	88.1, 88.4 (1938) 86.1, 86.3,* 86.6,* 87.3,* 88.* 89.1,* 89.4,* (1939) 80.5,* 83, 84.3, 84.5, 85.1,* 85.4, 87.3,* 88.6, 89,* 89.3, 89.6, 90.4
University of Cincinnati College of Medicine		(1939)	87.1
Univ. of Pennsylvania School of Medicine	(1935)	88.3, (1937)	87.2
University of Pittsburgh School of Medicine		(1938)	90
Medical College of the State of South Carolina		(1938)	89.6
University of Tennessee College of Medicine		(1935)	91.5
University of Texas School of Medicine		(1937)	88.6
University of Wisconsin Medical School		(1936)	90.3
University of Alberta Faculty of Medicine		(1936)	92.5
McGill University Faculty of Medicine		(1937)	88, 89

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Loyola University School of Medicine		(1929)	Oregon
Washington University School of Medicine		(1935)	Missouri
University of Pennsylvania School of Medicine		(1934)	Penna.
University of Tennessee College of Medicine		(1934)	Tennessee

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
George Washington University School of Medicine		(1937)	N. B. M. Ex.

* This applicant received the M.B. degree and will receive the M.D. degree on completion of internship.

West Virginia November Report

Dr. Arthur E. McClue, secretary, Public Health Council of West Virginia, reports the oral and written examination held at Fairmont, Nov. 6-8, 1939. The examination covered eleven subjects and included 110 questions. An average of 80 per cent was required to pass. Six applicants were examined, all of whom passed. Thirteen physicians were licensed by reciprocity and two physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Howard University College of Medicine		(1933)	85.6
University of Michigan Medical School		(1937)	90.5
University of Cincinnati College of Medicine		(1939)	89.3
Western Reserve University School of Medicine		(1938)	84.6
Jefferson Medical College of Philadelphia		(1938)	85.5
Medical College of Virginia		(1938)	88.3

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Emory University School of Medicine		(1933)	Georgia
Rush Medical College		(1937)	Maryland
Washington University School of Medicine		(1919) (1936)	Missouri, Michigan
University of Buffalo School of Medicine		(1937)	New Jersey
Hahnemann Medical College and Hospital of Philadelphia		(1938)	Ohio
Jefferson Medical College of Philadelphia		(1933) (1936)	N. Carolina, Pennsylvania, (1937) Ohio
Medical College of Virginia		(1938)	Kentucky
Univ. of Virginia Department of Medicine		(1919), (1936) (1928)	Kentucky Virginia, Tennessee

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
George Washington University School of Medicine		(1936)	N. B. M. Ex.
Columbia Univ. College of Physicians and Surgeons		(1936)	N. B. M. Ex.

Book Notices

The Pharmacopeia and the Physician: A Series of Articles on the Use in Therapy of Pharmacopeial Substances Which Appeared in The Journal of the American Medical Association. Fabrikoid. Price, $1.50. Pp. 333. Chicago: American Medical Association, 1939.

The aim of this series of articles on the use in therapy of pharmacopeial substances is, frankly speaking, propaganda for the Pharmacopeia: propaganda in the best sense. The authors for each of these two dozen articles were carefully selected by a special committee of the Pharmacopeial Revision Committee with the aim in view of securing scholarly practicing physicians capable of presenting the use of remedies in such a way as to make them available in everyday practice. These articles are not prepared in accordance with a cut and dried outline but are the individual, and many times largely original, expression of eminent specialists on their experience in the selection of the best available remedy for everyday conditions of disease. The articles are replete with actual prescriptions, with diagnostic hints and with so much else that is useful to the practicing physician that it is difficult to see how he could spend his time to better advantage than by investing it in their study. He will probably find it advisable to keep the booklet where he can readily consult it. These articles and those which are to follow are intended as a remedy for the admittedly poor teaching of therapeutics in our medical schools. Perhaps this is the way therapeutics should be taught, for the undergraduate is actually not ready to benefit fully from this kind of instruction.

Textbook of Pathology. A Correlation of Clinical Observations and Pathological Findings. By Charles W. Duval, M.D., Professor of Pathology and Bacteriology, Tulane University School of Medicine, New Orleans, and Herbert J. Schattenberg, M.D., Associate Professor of Pathology and Bacteriology, Tulane University School of Medicine. Cloth. Price, $8.50. Pp. 681, with 373 illustrations. New York & London: D. Appleton-Century Company, Incorporated, 1939.

A new textbook of pathology is presented by Professor Duval and his associate in the department at Tulane University. The prefatory statement promises that it will stress the relationship between pathologic physiology and morbid anatomy, certainly a desirable approach and one too long delayed in almost all the standard textbooks. This promise is not fulfilled. If a pathophysiologic approach is attempted, it would seem desirable that some of the fundamentals underlying the objective manifestations of morbid anatomy would be discussed, so that the student might have some of his incessant "whys?" answered in a fashion that would satisfy his curiosity and permit a build-up for the more complex problems. Unfortunately there is nothing of this sort to be discovered.

If, in the opening chapter, proliferation is discussed, one might at least expect some mention of the physicochemical mechanisms that are involved and which have received such intensive investigation not only by the cytologists and physiologists but even by mathematical biophysicists such as Rashevsky. In six paragraphs the entire problem is dismissed; only forty-eight pages is devoted to a discussion of what might be termed the general principles of pathology, but 40 per cent of the space is devoted to illustrations, some of which are not even relevant. Such superficial treatment can hardly be expected to satisfy the well prepared medical student of today.

After two introductory chapters, special pathology follows in orthodox divisions for some 600 pages. For the practitioner this may prove useful but here again pathologic physiology becomes merely wishful thinking. Chapter 3, which covers the diseases of the hematopoietic system, contains thirty-four pages, but half of the discussion is devoted to thrombosis and embolism.

How any reader, let alone a beginning student in pathology, is to get an adequate concept of tuberculous infection from the few pages devoted to tuberculosis of the respiratory system, and the scattered information under the various organs, is certainly puzzling. The changing reaction with sensitization is not even mentioned.

If a student can get much of value in pathophysiology or even of orthodox microscopic pathology from the following discussion of neuritis (p. 275) he will be more successful than the present reader: "Neuritis.—A condition in which the nerves are the seat of lesion, either as the direct result of the action of organic or inorganic toxins, or indirect through destruction of the governing motor and sensory neurons of the cord. Infection of nerves sometimes occurs as an extension of an infection from adjacent tissues, as in the instance of leprosy and tuberculosis. The more important excitants of neuritis are lead, alcohol, arsenic, diphtheria, vitamin deficiency, B. leprae, B. tuberculosis, viruses and other microbic toxins. . . . In the case of motor nerve involvement there is paralysis for the corresponding muscle or muscle fibers. Thus is induced partial or complete muscle paralysis; spastic if the involvement is for the upper motor neuron and flaccid if the lower. When the involvement is of sensory nerves the characteristic symptom is pain (neuralgia)."

In the discussion of the neoplasms there is only casual mention of the more recent experimental developments. As a sample, the opening of the first paragraph on page 514 is as follows: "Some of the most significant work in connection with the etiology of neoplasia is that of Carrel. This investigator claims that tar is capable of causing a certain type of neoplasm known as 'tar-tumor.'"

Hereditary factors merit the following five lines: "Finally it should be mentioned that the work of Maud Slye would seem to show a hereditary factor in certain neoplasia. Transmission from mother to offspring follows very accurately the mendelian principle. This investigator was able through careful breeding to reproduce cancer strains in mice and conversely to breed animals which were not susceptible to experimental cancer." Dr. Little might dissent.

It is hoped that the text will not be regarded as representative of the discipline in America.

The book is profusely illustrated, but the beginner will have difficulty in understanding some of the illustrations because there are no aids that might call his attention to the actual tissue alterations. A considerable number of the illustrations are poor from the point of view of technical reproduction. Others are irrelevant; in many all detail is lacking. The first illustration selected for the chapter on diseases of the alimentary tract shows a fascinating picture of a "hair-ball of the stomach." Possibly reminiscent of an era that long antedated the horse and buggy age, the selection might intrigue the psychiatrist. It would hardly be regarded by the teacher of pathology as evidence of good balance and proportion in a discussion of so important and practical a topic as the diseases of the gastrointestinal tract.

The publishers have used an excellent quality of paper, and the cloth binding appears to be serviceable.

Guiding Principles for Studies on the Nutrition of Populations. By Dr. E. J. Bigwood, Professor at the University of Brussels. League of Nations Health Organisation, Technical Commission on Nutrition. Series of League of Nations Publications III. Health 1939. III. 1. Official No.: C. H. 1401. [C. H./Com. Exp. Alim./50 (2).] Paper. Price, $1.50; 6s. Pp. 281, with 7 illustrations. New York: Columbia University Press; Geneva, 1939.

In the present volume, Dr. Bigwood has summarized the opinion of nutrition experts about the proper methods of conducting studies on the nutritional status of populations. It is a technical monograph for research investigators. The book describes the important points that must be borne in mind when nutrition surveys of populations are conducted in order that the work may be done scientifically and in a way that will facilitate comparison with other surveys. There is also a critical review of the various methods of assessing the nutritive status of individuals. There are four types of dietary surveys, and each is described in detail. Such questions as the scope and duration of surveys are discussed, and attention is given to the qualifications necessary for members of an investigating staff, the number of investigators considered desirable and many other practical problems. Considerable space is devoted to the interpretation of the data obtained from dietary surveys. Investigators will find the chapter devoted to statistical considerations of the data most useful. Too often dietary surveys have been made in the past without adequate attention being given to some of the essentials described in the monograph. The first part of the book tells what should be done and how to do it. The second part is concerned with various methods of measuring the nutritional status of persons, and it is of considerable medical interest. There are discussions of somatometric, clinical and physiologic

tests. A chapter is devoted to some examples of various types of investigations that have been made. The appendix provides general conclusions derived by the author from a consideration of the various topics. A bibliography, an index of terms and various tables which provide record forms that have been used in different countries are also included. The author points out that measures of the nutritional status of a population group are never simple. Measurements of the body provide an indication of the general physical condition of the persons examined, but the observations do not relate exclusively to the nutritional status. Anthropologic factors affect body build. The author points out that the more complex methods of assessing the nutritional status are not suitable for use in large scale inquiries. The clinical and physiologic tests, however, yield data of great value in smaller surveys. The author emphasizes that the more detailed an investigation can be made, even though it includes a comparatively small number of persons, the more one may expect to learn of the relation of dietary habits to malnutrition.

Grundlagen der Röntgendiagnostik und Röntgentherapie. Von Chefarzt Dr. G. Schulte, Knappschafts-Krankenhaus, Recklinghausen, und Doz. Dr. med. habil. F. Kuhlmann, Medizinische Universitätsklinik Halle a. S. Paper. Price, 7.50 marks. Pp. 140, with 148 illustrations. Leipzig: Georg Thieme, 1939.

The authors in this book have reviewed concisely the physicotechnical principles of roentgenography and roentgen therapy within a space of fourteen pages. In the same concise manner they have described the general pathologic conditions affecting the bones and joints and their differential diagnosis. They then review briefly the regional pathologic changes found in the skeletal system, using mostly diagrams to illustrate the characteristics of the various diseases affecting the anatomic regions.

Following this regional study, the authors discuss the general characteristics or principles governing the diagnosis of diseases affecting any or all of the bones or joints, such as inflammations, degenerative diseases, abnormalities of growth and changes incident to blood diseases. Bone tumors are described and illustrated on the basis of their special characteristics. One does not find complete descriptions or examples of the many variations which may be present in the obscure cases.

In the discussion of the lungs, they emphasize the importance of a roentgen investigation. They state that one cannot eliminate tuberculosis without a roentgen examination and then list twelve special reasons for making such an investigation. Brief descriptions are given of each typical disease of the lungs.

The characteristic appearances of the various diseases of the cardiovascular and gastrointestinal and genito-urinary diseases are described very briefly, detailed discussion of the various complications and differential diagnostic points being omitted.

Roentgen therapy is dealt with accurately but very briefly, and the authors give the indications for it in the various diseases. They give particularly a long list of inflammatory conditions that are benefited by this type of treatment.

As a whole, this book furnishes to the general practitioner, the student in radiology and the radiologist a brief summary of the methods used, the diseases which can be diagnosed and those which can be benefited by roentgen therapy. Conciseness, clear illustrations and accurate up-to-date radiologic information are its characteristics. It is well worth its price to these practitioners.

Fever Therapy Technique. By Jack R. Ewalt, M.D., Resident Psychiatrist, Colorado Psychopathic Hospital, Denver, Ernest E. Parsons, M.D., Captain, Medical Corps, United States Army, Stafford L. Warren, M.D., Associate Professor of Medicine in charge of Division of Radiology, University of Rochester School of Medicine, Rochester, N. Y., and Stafford L. Osborne, B.P.E., M.S., Associate in Physical Therapy, Northwestern University School of Medicine, Chicago. Foreword by Franklin G. Ebaugh, M.D. Cloth. Price, $2.50. Pp. 141, with 16 illustrations. New York & London: Paul B. Hoeber, Inc., 1939.

In the introduction the authors state that this book is written for the purpose of presenting, in a brief space, the actual technic of administering the various forms of therapeutic fever. In general it may be said that the monograph fulfils this aim. It describes the methods at present in vogue for producing fever by means of blankets, radiant energy, heated moist air, warm water sprays, hot baths, high frequency currents, electromagnetic induction, malaria, typhoid vaccine, relapsing fever, rat bite fever, sterile milk, antichancroid vaccine and sulfur in oil. Separate chapters are devoted to the more important of these procedures, namely to radiant energy, the hypertherm, high frequency currents and electromagnetic induction, malaria and, finally, typhoid vaccine. It can be readily understood that the attitudes of the four authors must necessarily differ. Therefore in the details of technic the subject matter is sometimes contradictory. However, these honest differences of opinion are not so outspoken that the value of the monograph is markedly decreased. After all, fever technic must be learned by actual clinical experience rather than by studying a book, no matter how well and how carefully the text has been assembled. In chapter x the authors pass beyond their original purpose and attempt to define the therapeutic value and dosage of fever in the various diseases which have been successfully treated by this method. Some of the ideas expressed in this chapter have a rather pedantic flavor and do not agree with the experience of many workers in the field. For example, the time-temperature dosage suggested for the treatment of syphilis of the central nervous system and dementia paralytica is much less than that which is ordinarily considered adequate. Also there is at present no general agreement that fever therapy is either useful in the treatment of nonsyphilitic inflammations of the eye or useless in multiple sclerosis. The monograph contains no statistics to support the various points of view and entirely personal attitudes are expressed in this chapter. This is perhaps in accord with the resolve of the authors not to review the literature. There is no bibliography. Almost no references to the literature are given. The index is adequate. All in all, the book should be useful for the instruction of nurses and technicians. It is hardly comprehensive enough to serve as a reference volume or guide for physicians or medical students.

The Heart-sounds in Normal and Pathological Conditions. By Oscar Orías, M.D., Director of the Institute of Physiology, Cordoba (Argentine), and Eduardo Braun-Menéndez, M.D., Director of Cardiological Investigations in the Institute of Physiology, Faculty of Medical Sciences, Buenos Aires. Cloth. Price, $4.75. Pp. 258, with 128 illustrations. New York, Toronto & London: Oxford University Press, 1939.

This is a translation of the volume published in Buenos Aires in 1937. As stated in a notice of the book in THE JOURNAL July 9, 1938, page 196, the authors record the result of thorough experimental and clinical studies of the mechanism of normal and pathologic heart sounds and their registration by phonocardiographic methods, particularly with the aid of electrical amplification. There are many excellent illustrations. The work will be helpful to those interested in the physiology and pathology of the heart. The appeal to the clinician will be more limited.

Standard Methods for the Examination of Dairy Products: Bacteriological, Bioassay and Chemical. Seventh edition of Standard Methods of Milk Analysis. Cloth. Price, $2.50. Pp. 190, with 22 illustrations. New York: American Public Health Association, 1939.

The seventh edition of this laboratory manual emphasizes once more the valuable service that the American Public Health Association renders by the establishment of committees to prepare such treatises. The last edition appeared in 1934. The present volume contains the newest approved methods for the bacteriologic and chemical examination of dairy products and a description of the bio-assay of vitamin D milk. In the appendix there are descriptions of several methods for testing by the phosphatase technic to determine whether milk has been properly pasteurized. None of the four methods described have been approved as a standard procedure, but the descriptions provided will afford various laboratories an opportunity to subject one or more methods to a thorough investigation.

It is noted with interest that the direct microscopic method for the examination of milk and cream for bacteria is described. This test permits the recognition of milk or cream with high bacterial counts within a few minutes, whereas the agar plate method requires many hours. It is interesting to note also the inclusion of a bio-assay method for determining the vitamin D potency of vitamin D milk. A standard procedure has long been in use for pharmaceutic products, but until recently no specific instructions for the bio-assay of milk have been generally available. The manual is indispensable for every health department and other laboratories concerned with the examination of dairy products.

Zwanglose Abhandlungen aus dem Gebiete der Frauenheilkunde. Herausgegeben von Professor Dr. Robert Schröder. Band I: Normale und pathologische Physiologie im Wasserhaushalt der Schwangeren. Von Dr. Herbert Albers. Paper. Price, 8.50 marks. Pp. 119, with 25 illustrations. Leipzig: Georg Thieme, 1939.

In this book the author discusses the normal and pathologic water metabolism of pregnant women. He first considers the significance of water for organic life and then takes up the question of the amount of blood and plasma found during pregnancy, the effect on these amounts produced by labor and their association with pregnancy edema. He also discusses venous pressure in healthy gravid women, in gravid women with toxemia and in women during labor. Another subject considered is the dependence of the colloid-osmotic pressure on the serum-protein picture in normal pregnancy in cases of toxemia and during the puerperium. The author also takes up the question Is the vascular system more permeable to fluids and plasma during pregnancy? He answers this in the affirmative because he found increased permeability for water in 83 per cent of all the pregnant women investigated and increased permeability for protein in 62 per cent.

At the end of the book the author devotes a chapter to explaining the significance of his investigations for practical obstetrics. He makes a distinction between serious bleeding during pregnancy and postpartum hemorrhage. He calls the loss of blood during pregnancy, such as occurs in placenta praevia, "plasma bleeding," whereas he designates postpartum hemorrhage as "erythrocyte bleeding." The latter is highly dangerous; hence much quicker action must be taken to stop the bleeding which occurs post partum than that which takes place during pregnancy.

The book is highly technical and will appeal to those interested in the research aspect of obstetrics.

Proctology for the General Practitioner. By Frederick C. Smith, M.D., M.Sc., F.A.P.S., Proctologist to St. Luke's and Children's Hospital, Philadelphia. Cloth. Price, $4.50. Pp. 386, with 145 illustrations. Philadelphia: F. A. Davis Company, 1939.

The information contained in this volume is that which usually is included in recent books on diseases of the anus, rectum and colon. The author has compiled his material according to a scheme which is customary in similar volumes. The general introductory chapters are on symptomatology, anatomic subjects, examination and diagnosis, preoperative and postoperative treatment and anesthesia. Chapters on diseases of the anus and rectum follow, and the book closes with a chapter on therapeutic suggestions.

Health for New York City's Millions: An Account of Activities of the Department of Health of the City of New York for 1938 with Comparative Vital Statistics Tables. John L. Rice, M.D., Commissioner of Health, Boards. Pp. 295, with illustrations. New York: Department of Health, 1939.

Through depressions and periods of prosperity, the Department of Health of the City of New York has continued to expand until its activities, expenditures and personnel are larger than that of most states. It has eleven bureaus and a number of "departmental boards and adjuncts." Its budget for 1938 was $5,528,234, and its employees numbered 2,842 persons. It seems to be working in close cooperation with organized medicine, since credit is repeatedly given to the medical societies within its boundaries. The department is entitled to a considerable portion of the credit for the steady decline in morbidity and mortality within its jurisdiction. During the present century the standardized death rate per thousand of population has dropped from about 21 to 9.8. The infant mortality, which was 55 per thousand live births in the three year period between 1930 to 1932, declined to 42 in the period between 1936 and 1938. Thirty years ago the maternal mortality rate was 48 per 10,000 live births; by 1933 it had risen to 64. In 1938 the maternal mortality rate was 33 per 10,000 terminated pregnancies. Diphtheria declined from 1,593 cases in 1934 to 700 in 1938. This represents a case rate reduction per hundred thousand of estimated population under 15 years of age from 96 in 1934 to 44 in 1938. The diphtheria death rate, calculated on the same basis, fell from 6 in 1934 to 2 in 1938. Pneumonia had remained between 200 and 300 per hundred thousand of population until 1918, when it rose to nearly 400 and then fell to 94 in 1934, when the effects of the new serum treatment began to be shown. Serum treatment may be assumed to be partially responsible for the further reduction of the death rate to 63 in 1938, but further data are needed before the exact role of serum therapy can be evaluated. Tuberculosis shows an even more startling and longer continued decline. Beginning in 1900 with a standardized death rate of more than 250 per hundred thousand, the decline was almost continuous until 1938, when it was 51. During 1938 more than 52,000 persons were roentgenographed in mass service. The size and diverse character of the population, and the health activities described, make this report an exceedingly valuable source of vital statistics for a considerable section of the population of this country.

Questions and Answers: The Questions and Answers in This Book Have Been Selected from Those Published in The Journal of the American Medical Association Department of Queries and Minor Notes in 1937, 1938 and 1939. Cloth. Price, $2. Pp. 478. Chicago: American Medical Association, 1939.

The popularity of that department of THE JOURNAL known as Queries and Minor Notes has stimulated the collection in book form of about 500 questions and answers published in THE JOURNAL during the years 1937, 1938 and 1939. These have been selected because they concern subjects of great general interest and because of the high instructional value of the replies. The questions have been arranged according to the systems of the human body, beginning with the head, and also according to specific diseases such as diathetic and deficiency diseases. There are also questions on obstetrics, industrial medicine and many miscellaneous topics. The replies to the questions which are sent to THE JOURNAL are prepared by experts in the fields concerned, chosen from among the leaders in the United States and particularly from among those who have given special study to the problem that is raised. Every physican will find in this book material of great practical value. Since much of the material is presented in the form of case reports for solution, the volume is most interesting.

Reports on Biological Standards—V: Variables Affecting the Estimation of Androgenic and Oestrogenic Activity. By C. W. Emmens. Medical Research Council, Special Report Series, No. 234. Paper. Price, 40 cents; 1s. 3d. Pp. 71, with 22 illustrations. New York: British Library of Information; London: His Majesty's Stationery Office, 1939.

This monograph deals with the sources of error commonly encountered in biologic assays of estrogens and androgens. There is presented in great detail the differences in results obtained with various technics of assay and the factors responsible for these differences. The author has demonstrated the common fallacies in comparing various sex hormones among themselves either in crude extracts or in pure forms on a biologic basis. Biologic assays may vary to a marked degree and may be quite unreliable unless numerous factors influencing the results are rigidly controlled. The clinical interpretation of results on urinary assays performed hurriedly and with insufficient equipment are, therefore, open to grave doubt. This monograph is an excellent contribution to the problems of the bio-assay of sex hormones and should be read by all those whose interests lie in this direction.

Principles of Chemistry: An Introductory Textbook of Inorganic, Organic, and Physiological Chemistry for Nurses and Students of Home Economics and Applied Chemistry, with Laboratory Experiments. By Joseph H. Roe, Ph.D., Professor of Biochemistry, School of Medicine, George Washington University, Washington, D. C. Fifth edition. Cloth. Price, $3. Pp. 503, with 58 illustrations. St. Louis: C. V. Mosby Company, 1939.

This edition should be welcomed by those who have become familiar with the excellence of the previous editions. The book offers in one volume the fundamental principles of inorganic, organic and physiologic chemistry, with emphasis on the last. Each chapter contains a list of questions for study. Some of these may be cited as examples of the method of treatment that has been employed. In the chapter on hydrogen there is a question about the use of this gas in the preparation of hydrogenated fats. In the chapter on water and hydrogen peroxide the student is asked about the uses of water in the human body; another question directs attention to dehydration of the body, and another inquires about the guiding principle for the maintenance of an adequate water intake by patients who cannot take fluids by mouth. In this manner the author has stressed the

biologic point of view throughout the volume. Despite the brevity of the treatment the information provided is accurate and in accord with recent knowledge of the subject. The chapters on foods, nutrition and internal secretions are particularly commendable for their accurate though brief presentation. Directions for laboratory experiments are included. There are a number of well chosen illustrations, and the appendix contains a list of names and formulas of common chemical compounds, a brief table of nutritional values of foods and a glossary of terms. There is a suitable index.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Patents: Patent Covering Basic Phenylmercuric Nitrate Invalid.—Nov. 19, 1934, Lyle A. Weed applied for a patent on a method of destroying or rendering innocuous pathogenic germs in contact with animal tissue. The method was based on the use of a certain organic mercuric compound that he claimed he had discovered which was not harmful to man or other animals. The supposed novelty in the alleged discovery, which seems to have constituted the primary basis of the patent, was Weed's claim that when mercurial compounds come into contact with body fluids the germicidal element in such compounds becomes available as a less soluble and less toxic substance and exercises a bactericidal effect as that substance slowly dissolves. He claimed that under the theory of ionization the positively charged mercury ions were adsorbed onto the negatively charged micro-organisms. Weed claimed further that he had discovered that basic phenylmercuric nitrate had such germicidal properties. On Sept. 17, 1935, Weed assigned his patent to the Hamilton Laboratories, Inc. The assignee thereafter, in the United States district court, eastern district, Tennessee, sued Samuel E. Massengill, doing business as the S. E. Massengill Company, charging infringement of the patent. Massengill contended that the patent was invalid and that therefore the acts that had been proved against him or that he had admitted did not constitute infringement.

A patent, said the court, is itself prima facie evidence that its subject matter is novel and that the requirements of patentability have been met. Such prima facie evidence, however, may be overcome by evidence to the contrary. When the defendant Massengill alleged in his defense that the patent that had been issued to Weed and assigned to the plaintiff was invalid, he assumed the burden of overcoming all reasonable doubt in favor of validity; of establishing that Weed was not the original, first and sole inventor and discoverer of the alleged germicide and germicidal method, or of any material or substantial part thereof, disclosed in the patent, and of showing that the alleged invention, in view of the prior state of the art, did not in fact constitute a patentable invention, improvement or discovery within the meaning of the patent law.

The evidence in the case showed that in 1924, ten years before Weed had applied for his patent, E. C. White had published an article in a periodical known as *Industrial and Engineering Chemistry* in which he discussed the relative toxicity and pharmacologic usefulness of organic compounds of mercury. In that article, White stated the very formula that was incorporated in the patent issued to Weed and suggested that other investigators take that formula, try its various combinations and thus unfold the whole story of pharmacologic mercurials. White's article, said the court, contained the answer to the problem that Weed claimed to have been the first to solve. The patent issued to Weed covered all organic mercuric compounds having the formula RHgX, in which R represents the phenyl radical of benzene carrying no substituent groups which react with either alkalis or acids to form salts and X represents a radical which exists as an anion, a negatively charged ion, when the compound is dissolved in water. Weed opened the door to these compounds, but White had already left the door ajar by the earlier publication of his article. In the judgment of the court, the distinction between Weed's alleged discovery and White's earlier disclosure was that Weed based the germicidal power that he claimed, in part at least, on the theory that the positively charged mercury ions of his formulas, including permitted substituent groups, when coming into contact with body fluids were adsorbed onto the negatively charged pathogenic micro-organisms. The formulation of that theory, however, while interesting, did not save the patent. The theories of ionization and the electron-sharing ability, which permeated the claims for the patent, were known to the art prior to Weed's work. It was known earlier that organic mercury in certain combinations with various groups of characteristic behavior retained its germicidal power and was less toxic to human beings than when used alone. Basic phenylmercuric nitrate, too, had been known to the art as early as 1870, although it was known as phenylmercuric nitrate until one of the plaintiff's officers discovered that it was basic. The court pointed out, moreover, that, although the use of the compounds involved in this case seems to be of undoubted value, it was still more or less experimental and that even before Weed's researches in this field similar mercurials had been the subject of every method of use claimed in the evidence.

The court concluded, therefore, that the patent and its various claims were invalid for want of patentable invention or discovery. The suit charging infringement was dismissed.—*Hamilton Laboratories, Inc. v. Massengill, 25 F. Supp. 464.*

Health Insurance: Total and Permanent Disability Defined.—The defendant insurance company promised to pay, under a group policy, certain benefits to the plaintiff if he became totally and permanently disabled as a result of bodily injury or disease so as to prevent him from engaging in any occupation and performing any work for compensation. The plaintiff was employed by a lead company from 1926 to March 15, 1931, when he was laid off along with other employees. During the thirty-eight months thereafter he was employed at manual labor by different government agencies engaged in the prosecution of relief projects. On Dec. 31, 1936, more than five years and nine months after the termination of his employment by the lead company, he brought suit against the defendant insurance company to recover benefits on the theory that during the period of his employment by the lead company, and while insured under the defendant's group policy, he became totally and permanently disabled. From a judgment in his favor, the defendant company appealed to the St. Louis court of appeals, Missouri.

The testimony of the claimant, his wife and fellow employees at the lead company was that subsequent to an attack of rheumatism in 1928 he was able to work only at light jobs because he became short of breath, had aches and pains in his back and chest, was weak and nervous and suffered from kidney trouble which interfered with his rest at night, that he tired easily and that his fellow employees helped him to do his work so as to enable him to keep his job. This evidence clearly showed that because of his physical condition the claimant was unable to do his work in the usual and customary way and that he required the assistance of his fellow workers in order to retain his job. The fact, therefore, that the claimant continued on the job until he was laid off constituted no insurmountable obstacle to his right to recover benefits; such fact was a circumstance to be considered by the jury as to the merits of his claim, but it did not preclude him from the right to have it submitted to the jury.

One of two physicians who had made physical examinations of the plaintiff subsequent to the termination of his services with the lead company testified that at the time of his first examination in December 1932 the claimant had cardiovascular disease with enlargement of his heart to the right, involvement of the myocardium, hypertension or high blood pressure and tachycardia or increased rate of the heart beat; that he had bronchitis, arthritis and nephritis, and that at the time of his second examination in May 1937 these conditions had grown progressively worse. In his opinion, any strain or effort incident to ordinary manual labor would increase the claimant's

blood pressure and the rate of his heart beat, would cause further damage to his heart and kidneys and would unquestionably impair his health and life. The second physician, who examined the claimant in 1935 and in July 1937, testified that he found the claimant to be suffering from hypertension, enlargement of the heart and myocarditis or chronic inflammation of the muscles of the heart. He was likewise of the opinion that considerable exercise such as would be involved in the performance of ordinary manual labor would weaken his heart by raising his blood pressure and bring him nearer to the state in which his heart would no longer be able to compensate for the increased burden placed on it.

The principal issue involved in this case, it seems, was whether the fact that the claimant was employed by the government on relief projects for a number of years after his services with the lead company terminated constituted any evidence that he was not totally and permanently disabled. The court thought that it did not. Not only did the evidence show the existence of the claimant's disability while employed by the government agencies, but the court pointed out that it is a matter of common knowledge that relief work was instituted only as a temporary measure for relieving unemployment and affording men an opportunity to earn the bare necessities of life and not as an "occupation" within the meaning of the disability clause of the policy. Also, there was evidence that there was a considerable number of persons employed on relief projects who were known to be physically incapacitated to do ordinary manual labor.

To be permanently and totally disabled, continued the court, within the meaning of a policy of insurance such as the one sued on in this case, it is not necessary that the insured be inert and absolutely helpless; it is sufficient if it is shown that his infirmity renders him unable to perform, in the usual and customary manner, substantially all the material duties of his own occupation, business or profession or of any other occupation, business or profession which his age, training, experience, education and physical condition would fit him for except for his disabling infirmity. In the opinion of the court, the claimant was entitled to the benefits provided in the policy, and the judgment of the trial court in his favor was affirmed. —*Rogers v. Metropolitan Life Ins. Co. (Mo.), 122 S. W. (2d) 5.*

Malpractice: Statute of Limitations Tolled Until Termination of Physician-Patient Relationship.—The defendant, a physician, operated on one of the plaintiffs in February 1932 to remove a cyst. Following the operation the patient complained of indigestion and gastritis, and the physician prescribed certain tablets. Subsequently, roentgenograms taken at the instance of another practitioner preparatory to the institution of colonic treatments revealed a foreign object in the patient's body, a skin clip, which, it was alleged, was left there by the defendant. The defendant examined the roentgenograms and told the patient not to worry, that the presence of the foreign object in her body would not "injure or be detrimental to her health" and that an operation to remove it was unnecessary. The patient, however, did not recover normal health and from time to time consulted the defendant relative to her condition. On June 7, 1933, he sent her to a hospital for observation and treatment by staff physicians, giving her a letter to the hospital stating that she had been having "considerable trouble with her throat" and that he would "like to have her looked over in the throat and nose department." According to the evidence, the hospital physicians made no reference to the foreign body and did not give her any advice with respect thereto. The patient continued to consult the defendant until as late as September 1934. In October 1934, another physician removed the skin clip. On Feb. 1, 1935, the patient and her husband sued the defendant for malpractice, and the trial court rendered judgment for the physician, holding that the action was barred by section 340, Code of Civil Procedure, California, which requires an action for injury caused by the wrongful act or neglect of another to be commenced within one year from the date of the injury. The plaintiffs then appealed to the district court of appeal, second district, division 1, California.

The physician contended that the statute should run from June 1933, at which time the patient had gone to the hospital and placed herself under the care of other physicians and that having failed to bring an action within one year after that date an action against him was barred by the statute. From the letter written by the physician referring the patient to the hospital, said the appellate court, it was apparent that the reference to the hospital was not made in connection with the presence in or the removal from the patient's body of the skin clip. There was evidence, too, that the only medical advice the patient received until October 1934 with reference to the skin clip and its possible deleterious effect was from the defendant, who was in constant contact with her until as late as September 1934. Since the record showed a continuation of the relationship of physician and patient until that date, there was a continuing obligation on the part of the defendant, and the statute of limitations did not commence to run until the termination of the relationship. Where the tort is continuing, the right of action is also continuing.

For the reasons indicated, the district court of appeal reversed the judgment of the trial court in favor of the physician and remanded the case for a new trial.—*Trombley v. Kolts (Calif.), 85 P. (2d) 541.*

Malpractice: Qualifications of Physician to Testify as Medical Expert Witness as Affected by Locale of Practice.—To qualify a physician, says the district court of appeal, second district, division 2, California, to testify as an expert witness in a malpractice action, it must be shown that he possesses learning and knowledge of the subject under inquiry sufficient to enable him to speak with authority on the subject and also a familiarity with the treatment and degree of care and skill of other practitioners in the locality in question sufficient to enable him to testify whether or not the treatment furnished the patient was consistent with what other physicians in the same community in the exercise of reasonable care would do under similar circumstances. The theory supporting this rule is that a physician in a small community or village, not having the same opportunity and resources for keeping abreast of the advances in his profession, should not be held to the same standard of care and skill as that employed by physicians in large cities. With this reason in mind, the court held that a physician from Los Angeles might properly testify as an expert on a question of medical practice pertaining to the act of a physician whose practice was confined to the city of Pasadena. The court further held that, for the purposes of the rule of law referred to, the cities of Los Angeles and Pasadena are in the same locality, since they are contiguous, they are located in the same county, they have the same general hospital, and physicians in the two cities belong to the same medical society, attend the same lectures and have available the same facilities for the treatment of patients and for keeping abreast of the advances in their profession.—*Warnock v. Kraft (Calif.), 85 P. (2d) 505.*

Society Proceedings

COMING MEETINGS

American Academy of Orthopedic Surgeons, Boston, Jan. 21-25. Dr. Carl E. Badgley, 1313 East Ann St., Ann Arbor, Mich., Secretary.

American Orthopsychiatric Association, Boston, Feb. 22-24. Dr. Norvelle C. La Mar, 149 East 73d St., New York, Secretary.

Annual Congress on Industrial Health, Chicago, Jan. 15-16. Dr. C. M. Peterson, 535 North Dearborn St., Chicago, Secretary.

Annual Congress on Medical Education and Licensure, Chicago, Feb. 12-13. Dr. W. D. Cutter, 535 North Dearborn St., Chicago, Secretary.

Middle Section, American Laryngological, Rhinological and Otological Society, Kansas City, Mo., Jan. 19. Dr. Sam E. Roberts, Professional Bldg., Kansas City, Mo., Chairman.

Mid-South Post-Graduate Medical Assembly, Memphis, Tenn., Feb. 13-16. Dr. A. F. Cooper, Goodwyn Institute Bldg., Memphis, Tenn., Secretary.

North Pacific Pediatric Society, Portland, Ore., Jan. 27. Dr. J. S. Backstrand, 388 State St., Salem, Ore., Secretary.

Society of Surgeons of New Jersey, Camden, Jan. 31. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.

Western Section, American Laryngological, Rhinological and Otological Society, Los Angeles, Jan. 26-27. Dr. Pierre Viole, 1930 Wilshire Blvd., Los Angeles, Chairman.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1930 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Annals of Surgery, Philadelphia

110: 801-960 (Nov.) 1939

Influence of Certain Drugs and Anesthetics on Gastrointestinal Tone and Motility. J. D. Bisgard and E. K. Johnson, Omaha.—p. 802.
Assay of General Anesthetic Agents. H. K. Beecher, Boston.—p. 823.
Trends in Inhalation Anesthesia. W. Bourne, Montreal.—p. 830.
Anoxia: Source of Possible Complications in Surgical Anesthesia. R. D. McClure, F. W. Hartman, J. G. Schnedorf and V. Schelling, Detroit.—p. 835.
Present Status of Spinal Anesthesia. H. L. Foss and L. F. Bush, Danville, Pa.—p. 851.
Spinal Anesthesia in Abdominal Surgery. R. R. Graham and W. E. Brown, Toronto.—p. 863.
Further Experiences in Use of Spinal Anesthesia for Thoracoplasty. F. B. Gurd, A. M. Vineberg and W. Bourne, Montreal.—p. 872.
Intravenous and Regional Anesthesia. J. S. Lundy, Rochester, Minn.—p. 878.
Sympathetic Nerve Block as Adjunct Anesthesia in Minimal Resection of Stomach for Peptic Ulcer. W. F. Rienhoff Jr., Baltimore.—p. 886.
Significance of Lipocaic in Surgery. L. R. Dragstedt, D. E. Clark and C. Vermeulen, Chicago.—p. 907.
Discussion of Multiple Neurofibromatosis (von Recklinghausen's Disease): Report of Two Cases Having Unusual Surgical Complications. R. Jones Jr. and D. Hart, Durham, N. C.—p. 916.
Effect on Bone Marrow of Disruption of Nutrient Artery and Vein. C. Huggins and E. Wiege, Chicago.—p. 940.
*Chondritis of Knee. W. Darrach, New York.—p. 948.
*Treatment of Avulsed Skin Flaps. A. W. Farmer, Toronto.—p. 951.

Chondritis of Knee.—Darrach states that the failure to cure internal derangement of the knee by removing a meniscus through a small incision has shown the wisdom of making an incision large enough to explore the knee joint more thoroughly. Of 376 arthrotomies for this condition 27.1 per cent were found to have an abnormal meniscus as the only lesion. In 15 per cent the anterior cruciate ligament has been found to be partially or completely ruptured. Other common additional lesions were hypertrophied fat pads, loose bodies, synovial changes and hypertrophic spurs. Four explorations revealed no lesions. The most commonly associated condition in this type of knee has been an alteration of the articular cartilage covering the femur, patella and tibia. In the majority of instances this condition involves only the superficial portion of the articular cartilage. Occasionally a large, deep crater is encountered extending into the bone, and a corresponding loose body may be found somewhere in the joint. It would seem proper to apply the term osteochondritis only to the latter type, if at all. When this condition has been found, it has been the author's custom to shave off with a knife or sharp gouge the affected cartilage, leaving as smooth a surface as possible. In eight cases he has seen at a secondary operation the late result. In six instances the areas were covered with shining, fibrous tissue either smooth or granular; in one this had occurred in the original lesion but new areas had appeared and in the other instance the original areas had deepened and enlarged. When this condition exists the return to normal function is distinctly slower than in the cases in which this complication did not occur. This applies especially to joint fluid. Although twenty-six of the patients were less than 20 years of age, the average age of the patients with chondritis was 33, as compared with an average age of 25 for those without chondritis. Because of its frequent association with other traumatic conditions of the knee, because it usually affects only the superficial portion of the articular cartilage and because it generally appears on two opposed surfaces, the author believes that this lesion is a response to trauma rather than the result of a general condition or to some interference with the subjacent blood supply. The term chondritis, therefore, seems more suitable than osteochondritis.

Treatment of Avulsed Skin Flaps.—Farmer reports four cases of severe avulsion of skin in which the method of treatment consisted first in the excision of all the avulsed skin and then sewing it back into position. The cleansing of the raw area is performed with aseptic rather than antiseptic fluids. Thus soap and water and saline solution are used. All the subcutaneous fat is removed from the avulsed skin by scraping or by cutting with curved scissors well into the dermis. The skin is then sewn accurately back onto the area from which it was removed. The graft is perforated with numerous small stab wounds. The primary dressing is of physiologic solution of sodium chloride. Firm pressure is obtained by bandaging and a plaster encasement insures immobility. The dressing is changed in from ten to fourteen days unless there is some special indication for an earlier examination. The author states that this type of graft gives a much better result than can be obtained with partial thickness grafts employed at a later date, and besides saving the damaged tissues from certain death it also saves much hospitalization and gives a better cosmetic and functional result than other methods.

Bulletin New York Academy of Medicine, New York

15: 717-768 (Nov.) 1939

Distribution of Enzymes in Tissue and Cells. K. Linderstrøm-Lang, Copenhagen, Denmark.—p. 719.
Some Comments on Arteriosclerosis in Wild Mammals and Birds. H. Fox, Philadelphia.—p. 748.
Psychologic Study of Migrainous Syndrome. H. Selinsky, New York.—p. 757.

Canadian Medical Association Journal, Montreal

41: 427-526 (Nov.) 1939

Lower Back Pain. J. M. Murray, Ottawa, Ont.—p. 427.
Multiple Pathologic Fractures Caused by Tuberculosis. R. I. Harris and H. S. Coulthard, Weston, Ont.—p. 434.
Primary Osteomyelitis of Pubic Bone: Two Cases. J. J. Dinan, Montreal.—p. 436.
Production of Hypertension by Prevention of Kidney Hypertrophy: Preliminary Report. W. F. Greenwood, R. Nassim and N. B. Taylor, Toronto.—p. 443.
Treatment of Pneumococcic Pneumonia with Sulfapyridine (Dagenan). J. M. Kilgour, Montreal.—p. 445.
*Effects of Tea Drinking. G. W. Halpenny and H. E. MacDermot, Montreal.—p. 449.
Medical Service and Mechanized Formations. R. M. Gorssline, Montreal.—p. 454.
Deaths Among War Pensioners. F. S. Burke, Ottawa, Ont.—p. 457.
Asthma. H. K. Detweiler, Toronto.—p. 465.
Method of Breech Delivery. N. W. Philpott, Montreal.—p. 468.
Ambulatory Treatment of Fractures. A. Gibson, Winnipeg, Man.—p. 470.
*Perforated Peptic Ulcers: Analysis of Series of 228 Consecutive Cases. A. Ross and C. Letourneau, Montreal.—p. 473.
Malignant Tumors of Colon and Rectum. C. G. Heyd, New York.—p. 480.
Anemia of the Newborn. J. Calder, Edmonton, Alta.—p. 484.
Lipoma of Diaphragm: Report of Case. H. C. Ballon and L. Spector, Montreal.—p. 487.

Effects of Tea Drinking.—Halpenny and MacDermot observed the effects of tea and coffee drinking on five women and five men, all healthy young adults. The subjects arrived for the tests at 8:30 a. m. daily for more than a month after an ordinary breakfast exclusive of tea or coffee. They voided urine and the specimens were discarded, after which the subjects lay down. Half an hour later tea or coffee was given, each individual receiving three 8 ounce (235 cc.) cups, with intervals of forty-five minutes between the cups. At noon the patients were allowed up and ate a regular lunch, but no fluids were taken. One cigaret was allowed after meals. At 1:30 p. m. they again lay down and resumed the morning routine. They went home at 4:30 p. m. They were allowed anything they wished for their evening meal, together with reasonable activities, but no heavy smoking or drinking was permitted. Throughout the day at the hospital the urine was measured, from 8:30 a. m. to 4:30 p. m. The fluid intake also was recorded. The blood pressure, temperature, pulse and respirations were taken three times a day, at 9, 12 and 4. Reading, writing, knitting and talking were allowed throughout the day, but no other activities. Cups of cold and hot water, respectively, had no effects on the pulse, temperature, blood pressure and urinary output. Good clear tea brewed for five minutes (0.2 Gm. of tea to the cup) produced pleasurable and mild stimulation in all the subjects; a few perspired slightly, but there was no other objective changes. Four subjects were given the tea cooled,

with no different effects. With milk and sugar or lemon added to the tea, the same pleasurable effects were produced. The same brand of tea brewed for ten minutes whether clear or with milk and sugar added produced definite symptoms of distaste, with slight nausea and some abdominal discomfort in three subjects. A clear five minute brew of cheap tea made some subjects think the taste was even better than the good brand, while others thought it bitter and less palatable. Four complained of some abdominal discomfort, and one was slightly nauseated with the last cup. With milk and sugar added, the bitterness was removed, and all found it pleasant enough, with no other effects. The clear ten minute brew of the cheap brand of tea was definitely too strong and bitter. Nearly all the subjects were nauseated and many complained of abdominal discomfort. When milk and sugar were added, this strength was found to be more palatable but it still produced some abdominal discomfort. With coffee the results were roughly similar in that a seven minute brew (the ordinary length of percolation) gave pleasurable effects and the stronger, ten minute brew was found to be more bitter although producing no special symptoms. In contrast to tea and coffee, 0.13 Gm. of caffeine or 0.32 Gm. of tannin or a combination of the two taken in hot water produced violent and unpleasant effects (nausea, abdominal pain, perspiration, vomiting and clamminess of the extremities). The effects of tea on gastric acidity and peptic activity are slight and variable. It does not increase acidity nor does it seem to alter the basal metabolic rate.

Perforated Peptic Ulcers.—Ross and Letourneau present the results of 228 consecutive cases of perforated peptic ulcer, verified either at operation or at postmortem examination. The total mortality rate for the series was 20.6 per cent. Of the 228 patients, eight died before they could be operated on. Of the remaining 220 patients who were operated on there were thirty-nine who died, a mortality of 17.7 per cent. Nineteen different surgeons took part in these operations. Men outnumbered women eighteen to one. More than half (53.6 per cent) of the perforations occurred between the ages of 30 and 50; the average was 42. Only 7.5 per cent of the patients gave an absolutely negative history of peptic ulcer. The onset of initial pain occurred in the epigastrium and right upper quadrant in 70 per cent of the patients. Nausea and vomiting accompanied perforation in 67 per cent of the instances. The commonest physical signs were generalized tenderness and rigidity. The leukocyte count was between ten and eighteen thousand in 70 per cent of the patients, and in 91 per cent the perforations occurred round the pylorus. Closure and posterior gastro-enterostomy without drainage gave a lower mortality than simple closure, both with and without drainage. Necropsies revealed no postoperative deaths attributable to a broken down gastro-enterostomy wound. Complications were no more frequent following gastro-enterostomy than after simple closures. Average convalescence following gastro-enterostomy was from three to four days shorter than that following simple closure.

Indiana State Medical Assn. Journal, Indianapolis

32: 599-674 (Nov.) 1939

Quality of Medicine. N. B. Van Etten, New York.—p. 599.
Major Tasks for the Medical Profession. E. M. Van Buskirk, Fort Wayne.—p. 604.
Diagnosis and Treatment of Pernicious Anemia. R. Isaacs, Ann Arbor, Mich.—p. 607.
Newer Concepts of Intestinal Infection. J. Felsen, New York.—p. 610.
Fatigue, Its Cause and Treatment. P. S. Johnson, Richmond.—p. 617.
Who Shall Choose the Anesthetic? E. T. Zaring, Terre Haute.—p. 620.
Intermittent Complete Heart Block: Report of Case. R. E. Lyons Jr., Bloomington.—p. 622.

Iowa State Medical Society Journal, Des Moines

29: 537-588 (Nov.) 1939

Bacillary Dysentery. W. H. Holmes, Chicago.—p. 537.
What Constitutes Adequate Care of the Child with Diabetes Mellitus? J. D. Boyd and R. L. Jackson, Iowa City.—p. 545.
Treatment of Traumatic Injuries of Abdominal Cavity, Its Wall and Contents. W. E. Cody, Sioux City.—p. 549.
Traumatic Lesions of Thorax and Its Contents. W. A. Anneberg, Carroll.—p. 555.
Meckel's Diverticulum as Cause of Intestinal Obstruction. R. R. Edwards, Centerville.—p. 559.
Massive Atelectasis: Report of Four Cases. H. P. Miller, Rock Island, Ill.—p. 561.
Patent Thyroglossal Duct: Case Report. J. A. W. Johnson, Newton.—p. 565.

Journal of Clinical Investigation, New York

18: 617-844 (Nov.) 1939. Partial Index

Variability of Proteinuria in Hypertensive Complications of Pregnancy. L. C. Chesley, Jersey City, N. J.—p. 617.
Clinical Studies of Blood Volume: VIII. Macrocytic and Hypochromic Anemias Due to Chronic Blood Loss, Hemolysis and Miscellaneous Causes, and Polycythemia Vera. J. G. Gibson 2d, A. W. Harris and V. W. Swigert, Boston.—p. 621.
*Peripheral Vascular Action of Estrogen in the Human Male. S. R. M. Reynolds and F. I. Foster, Brooklyn.—p. 649.
Studies on Destruction of Red Blood Cells: II. Chronic Hemolytic Anemia with Paroxysmal Nocturnal Hemoglobinuria: Certain Immunologic Aspects of Hemolytic Mechanism, with Special Reference to Serum Complement. T. H. Ham and J. H. Dingle, Boston.—p. 657.
Effect of Pitressin in Circulatory Collapse Induced by Sodium Nitrite. E. A. Stead Jr., P. Kunkel and S. Weiss, Boston.—p. 673.
*Effect of Paredrinol (α-N-Dimethyl-p-Hydroxyphenethylamine) on Sodium Nitrite Collapse and on Clinical Shock. P. Kunkel, E. A. Stead Jr. and S. Weiss, Boston.—p. 679.
Blood Chemical Changes in Boeck's Sarcoid, with Particular Reference to Protein, Calcium and Phosphatase Values. G. T. Harrell and Sara Fisher, Durham, N. C.—p. 687.
*Vitamin C Requirement of Man: Estimated After Prolonged Studies of Plasma Concentration and Daily Excretion of Vitamin C in Three Adults on Controlled Diets. Elaine P. Ralli, G. J. Friedman and S. Sherry, New York.—p. 705.
Effect of Estrogenic Substance on Blood Sugar of Female Diabetics After Menopause. C. J. Gessler, J. A. Halsted and R. P. Stetson, Boston.—p. 715.
Serum Lipoids and Proteins in Hypothyroidism. E. F. Gildea, E. B. Man and J. P. Peters, New Haven, Conn.—p. 739.
Diet and Death in Acute Uremia. T. Addis and W. Lew, San Francisco.—p. 773.
*Changes in Glucose Tolerance of Obese Subjects After Weight Reduction. R. S. Hubbard and E. C. Beck, Buffalo,—p. 783.
Observations on Absorption, Distribution and Excretion of Sulfapyridine. W. H. Brown, W. B. Thornton and J. S. Wilson, Toronto.—p. 803.
Coagulation Defect in Hemophilia: Studies of Clot Promoting Activity Associated with Plasma Euglobulin in Hemophilia. E. L. Loner and F. H. L. Taylor, Boston.—p. 821.

Peripheral Vascular Action of Estrogen.—Reynolds and Foster extend the list of the effects of estrogen on the peripheral circulation by observing the changes in cutaneous temperature and finger volume following the injection of estrogen to twenty normal adult men. Single observations on the effect of the estrogen were made on all subjects with the exception of three who received two injections and one subject who received nine injections. Approximately two thirds of the subjects showed an effect involving an increase in finger volume, commencing a few minutes after the injection and continuing from thirty to sixty minutes. The average percentage increase in finger volume was 4.6. No change in cutaneous temperature was observed. Injection of corn oil as a vehicle (as an unknown) had no such effect on finger volume in these subjects. The character of the response, along with other established facts regarding the vascular effects of estrogen, indicates that it depends on dilatation of the small vessels in the skin beyond the arterioles. There is no measurable increase in the rate of blood flow in the skin. The failure of estrogen to bring about dilatation of the cutaneous vessels in some subjects is unexplained.

Effect of Paredrinol on Circulatory Collapse.—Since in sodium nitrite collapse venous pooling and reflex arteriolar constriction occur, the ideal drug for the prevention of such collapse should not cause increased oxygen consumption or widespread chemical changes in the body. From studies of normal subjects, Kunkel and his co-workers found that paredrinol (α-N-dimethyl-p-hydroxyphenethylamine) fulfilled several of these requirements. Therefore they investigated its action in seven subjects with normal cardiovascular systems in whom collapse ending in syncope was induced by the administration of sodium nitrite. In four subjects the intramuscular injection of 25 mg. of paredrinol prevented the collapse induced in the upright position by sodium nitrite. In three others it had no effect. In two subjects with severe postural hypotension, symptoms of cerebral anoxia were prevented by the use of paredrinol. In seven of ten subjects in severe clinical shock resulting from infectious disease, the intramuscular or intravenous injection of from 15 to 50 mg. of paredrinol caused a rise in arterial pressure. Only two of these subjects showed definite clinical improvement. For one person paredrinol was effective both in the collapse induced by an acute streptococcic pharyngitis and in the collapse subsequently induced by motionless standing. The responses of the patients in severe clinical collapse differed from those in the normal subject as

follows: 1. From two to four times the amount of paredrinol was required to cause a significant elevation of blood pressure, and even then the arterial pressure rarely increased to hypertensive levels. 2. The cardiac rate was usually increased instead of decreased. 3. Repeated doses of the drug, when given after the blood pressure had returned to normal, failed to be as effective as the original injection. Paredrinol is a useful drug in the treatment of collapse caused by the pooling of blood within a dilated venous system. The study suggests, however, that in shock resulting primarily from loss of fluid from the blood stream the drug may not be helpful or it may even be harmful.

Ascorbic Acid Requirement of Man.—In order to determine the amount of ascorbic acid required daily by adults, Ralli and her associates controlled the dietary intake, fed the vitamin quantitatively and determined daily the twenty-four hour urinary excretion of the vitamin of three normal adults, and they correlated this with the plasma concentration at frequent intervals. The results suggest that the optimal daily intake of ascorbic acid in adults should be 100 mg. Ingestion of this amount was accompanied by maximal retention, approximately 90 mg. daily, and by a constant low excretion averaging from 8 to 13 mg. daily. When the amount of ascorbic acid ingested daily exceeded 100 mg., there was a prompt rise in the amount excreted and the excretion continued to parallel any increase in the amount ingested. When the daily feeding of 100 mg. of the vitamin was begun at a plasma level below 1 mg. per hundred cubic centimeters there was a slow gradual rise until this level had been reached. The number of daily doses of 100 mg. required to raise the plasma level depended on the plasma concentration when the feeding was begun. The daily and not the total amount of the vitamin fed was the deciding factor in raising and maintaining a higher plasma level. The results of the studies suggest that in normal individuals a fasting plasma level of 1 mg. per hundred cubic centimeters or over indicates complete saturation of the tissues by ascorbic acid. When less than 100 mg. of the vitamin was fed daily, it was impossible either to raise or to maintain a plasma level of 1 mg. per hundred cubic centimeters. When 50 mg. of the vitamin was given daily, the plasma concentration of ascorbic acid averaged 0.4 mg. per hundred cubic centimeters. As the patients were normal and as there were no symptoms of ascorbic acid deficiency it is suggested that this plasma level be considered the lower limit of normal. At this plasma level, however, the body tissues are not saturated with the vitamin. As tissue saturation can be obtained and maintained only on a daily intake of at least 100 mg. of ascorbic acid it is suggested that this be considered the optimal daily intake.

Dextrose Tolerance After Weight Reduction.—The effect of weight reduction on dextrose tolerance was determined by Hubbard and Beck on thirty-nine formerly obese patients who were brought approximately to normal weight by dietary therapy. No method of selection was used except that patients with diabetic symptoms were not studied. Otherwise, all patients presenting themselves at the clinic whose weight was reduced to an extent considered reasonably satisfactory and on whom the second dextrose tolerance was obtained after weight reduction have been included. Of the thirty-nine patients all but two were women from 25 to 72 years of age (average 44 years). The average time during which the patients took the diet before the tests were repeated was 350 days, with extreme values of 196 and 862 days. During this period they lost between 26 and 110 pounds (11.6 and 50 Kg.). The average weight lost was 58 pounds (26.3 Kg.). The proportion of patients who showed abnormal dextrose tolerance tests before weight reduction was 87 per cent but the degree of abnormality was not marked. After weight reduction 90 per cent of the patients showed some improvement in the test and only 23 per cent showed any demonstrable abnormality. The improvement in dextrose tolerance appeared to be due to the weight reduction rather than directly to the diet, for (1) the change in the curve persisted when the amount of carbohydrate fed was increased, (2) it was of a type which could not be explained readily by the ingestion of diets low in food value and (3) it paralleled roughly the changes in weight.

Journal Industrial Hygiene & Toxicology, Baltimore

21: 439-478 (Nov.) 1939

Ophthalmic Responsibilities of Industrial Medical Officer. F. Ridley, London, England.—p. 439.
Spectroscopic Analysis of Biologic Fluids for Heavy Metals. D. W. Armstrong and F. S. Brackett, Washington, D. C.—p. 448.
Volatilization of Lead Below 800 Degrees C. P. F. Rezin and P. Drinker, Boston.—p. 461.
Possibilities of Control of Lead Exposure by Examining Less Than Twenty-Four Hour Urine Samples. E. C. Barnes, East Pittsburgh, Pa. —p. 464.
Calibration and Use of Gas Interferometer. F. A. Patty, New York.—p. 469.

Journal of Lab. and Clinical Medicine, St. Louis

25: 113-224 (Nov.) 1939. Partial Index

*Toxicity of Various Iodine Solutions. A. L. Berman and A. C. Ivy, Chicago.—p. 113.
*Concentration of Vitamin C in Blood During and After Pregnancy. A. Sadovsky, D. Weber and E. Wertheimer, Jerusalem, Palestine.—p. 120.
Magnesium: Effects of Intravenous Injections on Human Heart. M. Bernstein and S. Simkins, Philadelphia.—p. 131.
Cholesterolysis in Blood Plasma of Individuals with Mental Disorders. P. G. Schube, Naomi Raskin and Eleanor Campbell, Boston.—p. 142.
Vitamin A Deficiency: Its Prevalence and Importance as Shown by a New Test. L. B. Pett, Edmonton, Alta.—p. 149.
Effect of Hypothalamic Lesions on Fever Induced by Intravenous Injection of Typhoid-Paratyphoid Vaccine. S. W. Ranson Jr., G. Clark and H. W. Magoun, Chicago.—p. 160.
Relationship of Insulin Hypoglycemic Reaction to Shock. W. C. Corwin, Philadelphia.—p. 169.
Additional Recording Obtained with Oscillatocapacigraph. C. Fenning and B. E. Bonar, Salt Lake City.—p. 175.
Instrument for Obtaining Bone Marrow. G. O. Favorite, Philadelphia. —p. 199.

Toxicity of Iodine Solutions.—Berman and Ivy report studies on the toxicity of some of the iodine solutions used in the preoperative treatment of thyrotoxicosis. They investigated compound solution of iodine (Lugol's), 10 per cent sodium iodide, 10 per cent potassium iodide, Amend's solution and others. Amend's solution is essentially a mixture of sodium iodide and iodine, the "free" iodine being absorbed to a protein precipitable with tungstic acid. The reported studies concern the relative toxicity of various iodine solutions in reference to blood pressure depression, to the emesis point when injected intravenously or when taken orally, to the blood iodine curve, and to their effect in iodine-sensitive patients. They found that the relative toxicity of an iodine solution administered orally, intravenously or percutaneously appears to be related to the presence of the sodium or potassium ion in the solution, to the presence of a buffering agent to neutralize free iodine if the latter is present, and possibly to the amount of protein iodide formed during absorption of orally administered iodine. Amend's solution and sodium iodide are less toxic when given intravenously, are less irritating to the stomach when taken orally, and are better tolerated by iodine-sensitive subjects than compound solution of iodine in iodine-equivalent doses. According to the results of the blood iodine curve and the uptake of iodine by the thyroid, Amend's solution and sodium iodide should be as effective as compound solution of iodine in the treatment of hyperthyroidism when given orally in iodine-equivalent doses.

Vitamin C in Blood During and After Pregnancy.—Sadovsky and his associates point out that, although the quantity of ascorbic acid excreted in the urine after a tolerance test with vitamin C is a widely used indicator of vitamin C deficiency in human beings, it is an open question whether deficiency or absence of reserve vitamin C is an indication of pathologic hypovitaminosis or avitaminosis. They believe that the surest method of determining an actual vitamin deficiency in contradistinction to a mere reserve deficiency is provided by assaying the concentration of vitamin C in the blood. They investigated the concentration of vitamin C in the blood of 322 women. In these the average concentration was found to be 1.01 mg. per hundred cubic centimeters of blood: in 207 pregnant women the average concentration of vitamin C was 1.09 mg.; in sixty-two postpartum women it was 0.79 mg.; in forty-seven nonpregnant women it was 0.98 mg. In severe cases of hyperemesis gravidarum the concentration of vitamin C was consistently low and averaged 0.7 mg. per hundred cubic centimeters of blood. However, this low concentration is believed to be of secondary origin and administration of vitamin C is therefore not a causal therapy. The concentra-

tion of vitamin C in the blood of pregnant women with gingivitis was normal, but when gingivitis was complicated by caries it was slightly below normal. The authors also investigated the concentration of vitamin C in human milk during the first nine days after confinement. They made 147 tests in sixty-two cases and found the average concentration to be 4.62 mg. per hundred cubic centimeters of milk. Beginning from the first day after birth, they detected a continuous increase in the vitamin C content of the milk. The quantity of vitamin C excreted daily in the milk was calculated to be 2.4 mg. on the second day and 27 mg. on the eighth day post partum. The vitamin C concentrations of milk and blood were not found to be definitely correlated. The age of the mother, the number of children previously borne and the weight of the newborn infant do not influence the concentration of vitamin C in the milk and in the blood. The blood concentration of vitamin C after confinement was below normal (less than 0.75 mg. per hundred cubic centimeters) in 50 per cent of the patients examined. In certain patients, values as low as 0.32 mg. per cubic centimeter were encountered. A survey of the concentration of vitamin C in the blood during different months of the year revealed the existence of a markedly higher average during the citrus fruit season.

Laryngoscope, St. Louis

49: 877-1042 (Oct.) 1939

Ménière's Syndrome. H. Brunner, Chicago.—p. 877.
Use and Effectiveness of Hearing Aids. G. Berry, Worcester, Mass.—p. 912.
Endaural Route. D. E. S. Wishart, Toronto.—p. 943.
Anatomy of Cranial Blood Sinuses with Particular Reference to Lateral. B. Woodhall, Durham, N. C.—p. 966.
Head Noises and Deafness: Peripheral and Central. E. P. Fowler, New York.—p. 1011.
Report of Unusual Bacterial Findings in Fatal Case of Chronic Otitis Media with Complications. H. Newhart, Minneapolis.—p. 1024.
Report of Present Status of Standardization of Hearing Aids. E. P. Fowler, New York.—p. 1031.

Minnesota Medicine, St. Paul

22: 735-806 (Nov.) 1939

Diagnosis and Treatment of Acute Appendicitis and Its Complications. N. Leitch, Warroad.—p. 735.
*Extreme Cardiac Hypertrophy: Report of Forty-Four Cases in Which the Heart Weighed 800 Gm. or More. E. C. Rosenow Jr. and H. L. Smith, Rochester.—p. 739.
Spontaneous Cure of Acute Regional Enteritis. D. C. MacKinnon, Minneapolis.—p. 744.
Easily Overlooked Conditions of Back and Shoulder Girdle: Their Relation to Physical Therapy. F. H. Krusen and W. C. Basom, Rochester.—p. 746.
Pregnancy and Childbirth Among the North American Indians. J. L. Rothrock, St. Paul.—p. 750.
Intestinal Obstruction, with Statistical Study of Asbury Hospital Cases. C. C. Kennedy and H. J. Hanson, Minneapolis.—p. 757.
Male Hormones. M. H. Hoffman, St. Paul.—p. 767.
*Hypoglycemic Cerebral Damage in Diabetic Patients. J. A. Layne and A. B. Baker, Minneapolis.—p. 771.
Radium Treatment of Certain Rare Benign Conditions. R. E. Fricke, Rochester.—p. 776.

Extreme Cardiac Hypertrophy.—In an attempt to determine the most common causes of marked cardiac hypertrophy, Rosenow and Smith studied the clinical and postmortem records of forty-four cases in which the heart weighed 800 Gm. or more. The forty-four cases can be divided into three main groups, according to the clinical diagnosis: hypertension, chronic endocarditis and a miscellaneous group. There were twenty cases in which a diagnosis of hypertension was made and fifteen cases in which the principal diagnosis was chronic rheumatic endocarditis with deformed cardiac valves. In the miscellaneous group there were two cases in which nothing was found to explain the excessive cardiac hypertrophy except extreme obesity, two had syphilitic aortitis with aortic insufficiency, one had an unusual congenital patent foramen ovale, three had severe coronary sclerosis and one had an adenomatous goiter with hyperthyroidism. Often there was more than one cause for the cardiac enlargement. In thirteen of the twenty cases of hypertension, obesity was present. In the cases of chronic endocarditis more than one valve was usually involved. In six of the nine cases in which more than one valve was involved, chronic adhesive pericarditis was present. Chronic aortic endocarditis appears a more important factor in the production of extreme cardiac enlargement than is hypertension; that is, it produces larger hearts than does hypertension. The average age of the patients with hypertension was 54.5 years, the average body weight was 200½ pounds (90.9 Kg.) and the average weight of the heart was 831.4 Gm. In the fifteen cases of chronic endocarditis the average age was 45.3 years, the average body weight was 178.3 pounds (80.8 Kg.) and the average weight of the heart was 905.8 Gm.

Hypoglycemic Cerebral Damage in Diabetic Patients.—With the purpose of emphasizing the dangers of hypoglycemia in diabetes, Layne and Baker report seven cases in which they have no doubt that definite cerebral damage occurred. This has been verified by postmortem studies of the four fatal cases and by clinical observations of those in which recovery occurred. The potential dangers of hypoglycemia are accentuated by the fact that one is unable to predict when such a reaction will occur, since the individual response to insulin may vary from person to person and even within the same individual. With the increasing use of protamine zinc insulin the usual prodromes of incipient hypoglycemia are frequently altered and therefore not recognized by the patient or the family. Knowledge concerning which individuals can and which cannot tolerate a hypoglycemic condition is indefinite. However, one fact stands out, and that is that any associated chronic disease that might affect cerebral tissue (alcoholism, arteriosclerosis or prolonged chronic infection) will tend to make diabetic patients, when hypoglycemia develops in them, much more susceptible to irreversible cerebral tissue changes. In such individuals one must be extremely cautious to avoid even the slightest degree of hypoglycemia and to treat these reactions, if they occur, immediately and adequately. The dangers of hypoglycemia are of more significance in the younger age group, in which death does not always ensue, but the reaction produces permanent cerebral damage with a resulting slow recovery and persisting disabilities in the neurologic and mental spheres. In many of these individuals hypoglycemia develops with little or no alteration in their insulin dosage, the condition is frequently misdiagnosed as diabetic acidosis and the patient is given more insulin. This additional insulin may be just sufficient to produce irreversible changes in an already hypoglycemic brain. In view of the distinct possibility of cerebral damage one must caution against a too hasty administration of insulin to a comatose diabetic patient. Not only should the diabetic individual be instructed in the possible dangers of hypoglycemia but his family and attendants should be educated to recognize the prodromes of hypoglycemia and to appreciate the absolute necessity of employing the proper precautions to prevent the development of a severe reaction. Once the brain tissue has been damaged by hypoglycemia, the return of the blood sugar to a normal or an elevated level appears to have little effect on the course of the illness. Nevertheless a normal or slightly elevated blood sugar level should be maintained during this period, as a great deal of the cerebral change may be reversible and definite improvement may occur.

New England Journal of Medicine, Boston

221: 721-760 (Nov. 9) 1939

*Nonspecific Treatment of Pneumonia in Infants and Children. F. C. McDonald, Boston.—p. 721.
Significance of Type XIV Pneumococcus Infection and Therapeutic Value of Specific Rabbit Serum for This Type of Pneumonia in Infants and Children. E. C. Curnen, Boston.—p. 725.
Treatment of Pneumococcic Pneumonia in Infants and Children with Sulfapyridine. J. A. V. Davies, Boston.—p. 734.
Further Studies on Personality and Sociologic Factors in Prognosis and Treatment of Chronic Alcoholism. R. Fleming and K. J. Tillotson, Waverley, Mass.—p. 741.
Orthopedic Surgery. M. N. Smith-Petersen, Boston.—p. 745.

Nonspecific Treatment of Pneumonia in Children.—McDonald says that, although specific chemicals and serums were used at the Boston Floating Hospital for the treatment of some infants and children with pneumonia, the use of nonspecific therapy has been continued and this report concerns itself with these general nonspecific methods and the results achieved by them. One of the most important principles of the nonspecific therapy of pneumonia was conservation of the child's energy. The measures included increasing the oxygen of the inspired air, judicious use of sedatives and efficient

nursing care. Commercial oxygen was used, which for these purposes is just as good as the chemically pure product. A concentration of from 40 to 60 per cent of oxygen in a suitable tent may be maintained for about twenty-four hours with about 300 cubic feet of oxygen. The oxygen of the inspired air was measured at least every two hours. A relative humidity of from 40 to 50 per cent makes breathing easier and permits better drainage of secretions from the respiratory tract. The humidity is generally found to be within the desired range if the temperature in the tent is kept between 75 and 80 F. Under these conditions all clothing may be removed from the chest and abdomen, which permits greater freedom of movement and a better opportunity of observing the respiratory movements. Older children were allowed to assume the position of choice; infants were placed in various positions until the most comfortable one was found. Many children and older infants assumed the knee-chest position. Small infants generally seemed more comfortable lying prone with the head lower than the chest, but some of them breathed more easily in a supine position with the shoulders elevated and the head and neck in partial extension. Removal of tenacious secretion from the upper respiratory tract usually induced peaceful sleep. Morphine sulfate, administered subcutaneously, is the author's choice of sedatives. Morphine used in connection with oxygen therapy usually changes a struggling, frightened child who is not taking enough nourishment to one who is well poised, partially relaxed and eager for food. Fluids should be given in ample amounts. A mixture consisting of one part of physiologic solution of sodium chloride, two parts of fruit juice and three parts of 10 per cent dextrose solution was commonly used. Since this mixture contains food it was usually not given oftener than every four hours, the total amount for twenty-four hours ranging from 500 to 700 cc. Water should be given between feedings to make up a daily fluid intake of from 1,000 to 1,500 cc. Whey and broth were often preferred by the older children. As a source of vitamin A, a concentrated fish oil was given, at least 16,000 international units; this also provided an adequate amount of vitamin D. Fifty international units of vitamin B_1 for each hundred calories in the diet was given, which was double the estimated daily requirement. During convalescence all patients were provided with natural foodstuffs rich in the whole vitamin B complex. One hundred mg. of ascorbic acid was given daily. In the summary the author stresses that in this series of cases the mortality from pneumonia was greatly reduced without the aid of specific chemicals or serums. This does not imply that these specific methods are not of value, for at the author's hospital they are now used in almost every case. It is emphasized that the nonspecific form of treatment is of the utmost importance and should be given consideration in the treatment of pneumonia in infants and children.

New York State Journal of Medicine, New York

39: 2005-2080 (Nov. 1) 1939

Advantages of Silk in General Surgery. D. Guthrie, Sayre, Pa.; M. J. Brown, Davenport, Iowa, and K. W. Woodhouse, Sayre, Pa.—p. 2011.
Congenital Absence of Vagina: Features Simplifying Procedure for Reconstruction. N. P. Sears, Syracuse.—p. 2019.
Peritoneoscopy. C. D. Sawyer, Brooklyn.—p. 2022.
Evaluation of Intravenous Anesthesia. R. M. Tovell and M. Garofalo, Hartford, Conn.—p. 2026.
Distribution of Tuberculosis Mortality by Place of Death. E. X. Mikol, Albany.—p. 2033.
Chronic Arthritis: Differential Diagnosis and Special Treatment Methods: Medical, Orthopedic, Physical Therapy. B. L. Wyatt, H. E. Thompson and J. D. Francis, Tucson, Ariz.—p. 2037.
Prophylactic Exercises for Children. J. Weiss and H. J. Behrend, New York.—p. 2044.
X-Ray Visualization of Soft Tissues of Advanced Pregnancy, Normal and Abnormal. W. Snow, New York.—p. 2050.
Cystitis Emphysematosa Treated with Sulfanilamide. S. F. Wilhelm, New York.—p. 2054.
Perforated Peptic Ulcer: Report of Two Cases. J. M. Flynn, Rochester, N. Y.—p. 2057.

Philippine Islands Med. Association Journal, Manila

19: 541-602 (Sept.) 1939

Fecal Fistulas. A. Mandanas, F. C. Guzman and S. C. Meñez, Manila.—p. 541.
Effect of Medical Supervision on Infant Mortality in Rural Community. M. Y. Matias and T. M. Gan, Manila.—p. 549.
Incidence of Ophthalmia Neonatorum in the Philippines. F. Z. Cruz, Manila.—p. 555.
Theoretical and Practical Aspects of Treatment of Beriberi. R. V. Guiang, Bugallon, Pangasinan.—p. 563.

Puerto Rico J. Pub. Health & Trop. Med., San Juan

15: 1-136 (Sept.) 1939

Epidemiology of Malaria, with Special Reference to Puerto Rico. W. C. Earle, Cuernavaca, Morelos, Mexico.—p. 3.
Health Work in Rural Areas of Puerto Rico. P. Morales Otero and M. A. Pérez, San Juan.—p. 44.
*Hematology of Sprue: Report on 100 Cases in Puerto Rico. R. Rodriguez-Molina, San Juan.—p. 89.
Latent Pulmonary Disease Revealed by X-Ray in Intestinal Bilharziasis (Schistosoma Mansoni). F. Mainzer, Alexandria, Egypt.—p. 111.

Hematology of Sprue.—Rodriguez-Molina studied the blood of 100 patients with sprue before treatment. An erythrocyte count below four million per cubic millimeter was present in 95 per cent of the cases; in only 51 per cent was the hemoglobin below 10.2 Gm. In no case were normal levels for hemoglobin and erythrocytes observed. The degree of anemia for the entire group was marked, the mean erythrocyte count being 2,510,000 $\pm$ 0.064 million per cubic millimeter, and the mean hemoglobin was 9.77 $\pm$ 0.23 Gm. A macrocytic type of anemia was found in 90 per cent of the cases, normocytic in 7 per cent, simple microcytic in 1 per cent and hypochromic in 2 per cent. Examination of stained smears revealed anisocytosis, poikilocytosis, macrocytes, oval macrocytes, microcytes, hypochromia, polychromatophilia, basophilic stippling, Howell-Jolly bodies and Cabot's ring bodies. In ninety-nine cases the mean leukocyte count was 4,960 $\pm$ 0.144 cells. Leukopenia (below 5,000) was present in 56.5 per cent of the cases. Considering the series of cases as a unit, the Schilling hemogram did not reveal a regenerative shift in the granular leukocytes. A relative lymphocytosis was found in only 34 per cent and absolute lymphocytosis in 2.45 per cent of the cases. Morphologic abnormalities in the granular leukocytes were observed in some instances. Unusually large lymphocytes with pyknotic or perforated nuclei and scant cytoplasm were also encountered occasionally. The mean reticulocyte count was 1.8 per cent. A reduction in the number of platelets was observed, the mean count being 142,000 per cubic millimeter. It is suggested that the anemia of sprue should not be called aplastic or unregenerative. In the author's opinion the peripheral blood pictures in sprue and in addisonian anemia are indistinguishable. The blood picture in sprue reflects not only a disturbance of the hemoglobiniferous cells of the marrow but also a disturbance of the leukocytes and platelets as well. The existence of an involvement of the entire marrow or panmyelopathy in this condition is assumed.

Rocky Mountain Medical Journal, Denver

36: 749-836 (Nov.) 1939

Shifting Frontiers of Public Health. J. W. Amesse, Denver.—p. 766.
Benign and Malignant Tumors of Stomach. W. Walters, Rochester, Minn.—p. 770.
Last Ten Years and the Outlook. H. T. Sethman, Denver.—p. 778.

Southern Medical Journal, Birmingham, Ala.

32: 1077-1170 (Nov.) 1939

Lipoid Cell Pneumonia: Adult Type. H. M. Thomas Jr. and W. F. Rienhoff Jr., Baltimore.—p. 1077.
Perforation of Cervical Esophagus. J. W. Snyder, Miami, Fla.—p. 1080.
Idiopathic Gangrene of Scrotum: Case Report. H. S. Browne and R. L. Smith, Tulsa, Okla.—p. 1084.
Carcinoma of Lateral Aberrant Thyroid: Report of Case. K. H. Ho, St. Louis.—p. 1087.
Use of Clotted Blood in Typing and Cross Matching Blood for Transfusion. L. W. Diggs and Alice Jean Keith, Memphis, Tenn.—p. 1089.
*Incidence of Trichinosis in the Middle South. G. T. Harrell and C. Johnston, Durham, N. C.—p. 1091.
*Intestinal Parasite Survey in Alabama. W. H. Y. Smith, D. G. Gill, Montgomery, Ala., and J. G. McAlpine, Baltimore.—p. 1094.
Toxicity for Human Beings of Diethylene Glycol with Sulfanilamide. H. O. Calvery and T. G. Klumpp, Washington, D. C.—p. 1105.
Rat Bite Fever in Children. H. M. Gilkey and C. C. Dennie, Kansas City, Mo.—p. 1109.
Relationship of Hypothyroidism to Ophthalmology. H. J. Howard, St. Louis.—p. 1112.
Role of Plastic Surgery in Injuries of Face. C. von Wedel, Oklahoma City.—p. 1118.
Irradiation and Surgery in Treatment of Cancer of Breast. G. A. Stewart, Baltimore.—p. 1121.
Traumatic Intussusception: Case Report. T. E. Martin and C. Love, Guntersville, Ala.—p. 1124.
Trends in Practice of Medicine and in Medical Leadership. H. F. Garrison, Jackson, Miss.—p. 1125.

Trichinosis in the Middle South.—The incidence of infestation with trichinae in North Carolina in necropsy material consisting chiefly of native-born farmers of Negro or Scotch-Irish-English descent, Harrell and Johnston report, is 2.8 per

cent. This was demonstrated by the muscle press and digestion technics. They believe that meat from garbage-fed hogs is probably the chief source of human infection. Most southern hogs are grain fed and the incidence of infestation in hogs and human beings is much lower here than elsewhere. According to reports from other surveys, infestations with trichinae occur in from 3.5 to 27.6 per cent of cases coming to necropsy. The incidence varies with the method of detection and the portion of the United States in which the study is done.

Intestinal Parasite Survey in Alabama.—Smith and his associates say that a statewide survey of the incidence of intestinal narasitism was carried out in the sixty-seven counties of Alabama. The majority of the subjects examined were school children, though some adults and some preschool children are included in the survey. Of the 253,630 individuals examined 38,810, or 15.3 per cent, were found to harbor hookworm. The distribution by zones, race, sex and age is given. Of the total sample, 2,741 individuals, or 1.1 per cent, were infested with Ascaris lumbricoides. The distribution of Ascaris in Alabama is rather haphazard with counties showing mild infestation rates contiguous to counties with extremely light rates. There were 3,605 individuals, or 1.4 per cent, found harboring Taenia nana. The distribution of this parasite appears to have a fairly definite zoning; the northern counties show heavier infestation rates than the southern counties. Trichuris trichiura is not much of a problem in Alabama, as only 105 of the 253,630 examined were found to be infested with this parasite. The incidence of Enterobius vermicularis in an institution for the mentally deficient was found to be 65.15 per cent. There was a much heavier infestation rate among the men than among the women of this institution. In this institutional survey a comparison was made of salt flotation and anal swabbing methods in determining the presence of this type of infestation. The superiority of anal swabs was quite definitely shown.

Surgery, St. Louis

6: 653-816 (Nov.) 1939

Anatomy of Inguinal Region. A. B. Howell, Baltimore.—p. 653.
Activity of Isolated Segments of Colon of Dogs, with Special Reference to Influence of Certain Drugs. R. E. Reagan, Benton Harbor, Mich., and C. B. Puestow, Chicago.—p. 663.
Studies of Intestinal Motility: Effect of Intravenous Solutions and of Insulin on Peristalsis. W. P. Kleitsch and C. B. Puestow, Chicago.—p. 679.
Gastric Peristalsis. S. Gordon and A. C. Singleton, Toronto.—p. 697.
Neurogenic Fibroma of Transverse Colon. F. Glenn, New York.—p. 703.
Nutritional Disturbances in Regional Enteritis: Case Report and Discussion of Effect of These Disturbances on Postoperative Course. D. Casten, New York.—p. 708.
Necrotizing Arteritis (Periarteritis Nodosa). C. F. Sawyer, Chicago.—p. 717.
*Edema and Congestion of Lungs Resulting from Intracranial Hemorrhage. S. J. Weisman, Minneapolis.—p. 722.
Pyonephrosis in Congenital Polycystic Kidneys. A. E. Goldstein and B. Klotz, Baltimore.—p. 730.
*Pathologic Considerations of Sarcoma of Mammary Gland. J. M. Miller and W. C. MacCarty, Rochester, Minn.—p. 746.
Isotonic Aqueous Iodine Solution as Skin Antiseptic: Clinical Appraisal. M. Lee and P. I. Hoxworth, Cincinnati.—p. 762.

Edema of Lungs from Intracranial Hemorrhage.—Weisman says that at the present time it seems that shock, as described by Moon, accounts for the pulmonary changes seen in fatal cases of intracranial hemorrhage. The purpose of the study was to determine whether edema and congestion of the lungs are constantly associated with fatal intracranial hemorrhage and whether the pulmonary lesions found with spontaneous hemorrhage are different from those found with traumatic hemorrhage. From the necropsy records of the department of pathology of the University of Minnesota, all the cases of traumatic and spontaneous intracranial hemorrhage during the years 1932 to 1937 inclusive were selected for study. As controls, 200 cases were selected at random in which the lungs were normal and in which there was no intracranial lesion or heart disease. A total of 886 cases has been studied, which includes 226 cases of spontaneous hemorrhage, 460 cases of traumatic hemorrhage and 200 control cases. A table which records the weights of the lungs in 460 cases of traumatic intracranial hemorrhage and in 226 cases of spontaneous intracranial hemorrhage reveals that practically no differences exist between these two groups, for in the group with traumatic hemorrhage the weight of the lung exceeded 900 Gm. in 73.3 per cent of the cases and in the group with spontaneous hemorrhage this weight was exceeded in 68 per cent of the cases; that is, in over two thirds of the cases with intracranial hemorrhage the pulmonary weight exceeded 900 Gm., whereas this was the case in only 2 per cent of the control cases. The question arises as to how rapidly edema and congestion of the lungs develop. There were in the traumatic group sixty cases in which death occurred within one hour after the injury. Of these cases 56.7 per cent showed lungs weighing more than 900 Gm. The number of spontaneous cases with a time interval of one hour or less is too small for comparison. It appears that edema and congestion of the lungs in cases of traumatic intracranial hemorrhage develop within one hour to a point which is later exceeded but little, unless pneumonia supervenes. On the basis of his observations the author considers it probable that edema and congestion of the lungs are contributing causes of death in cases of intracranial hemorrhage.

Sarcoma of Mammary Gland.—The lack of good criteria for diagnosis and the use of the term "sarcoma" as a catch-all for all tumors not distinctly epithelial in nature are two of the main reasons for the confusion in the nomenclature of mammary sarcomas. Miller and MacCarty maintain that in the initial stages of development all true sarcomas of the breast have a sameness of appearance. The majority are well encapsulated, round, irregular or slightly lobulated and lie in or next to the glandular structure. At an early stage they are not attached to the skin or pectoral muscle and consequently can be rather easily "shelled out" in many instances. The nipple usually is not retracted. On cross section the color of the growths varies from a gray-white to a gray-red and the neoplasms are of moderately firm consistency. The chief representative of the pure type of sarcoma is the fibrosarcoma or spindle-cell type. On microscopic study, numbers of fusiform cells are seen lying in close apposition and forming strands that run in different directions, frequently interlacing. Cut in transverse section, these spindle-shaped elements are small and round and possess a nucleus that is relatively large and ovoid and has a well defined network of chromatin. Mitotic figures are present in varied amounts and blood vessels may be relatively frequent. Further the authors discuss the term "round-cell sarcoma," which has persisted in the literature in spite of its recognized inadequacy. This term is applied to an ill defined group of neoplasms which should not be included under the category of pure sarcoma of the breast. Careful study of many of these cases proves that a large number are merely atypical carcinomas. The wide diversity of tissue which may be found in the mammary gland was realized about a century ago by Cooper, for he stated then that all the changes which occur in other tissues can occur in the breast and that, in addition, some changes are peculiar to it. The presence of cartilage and bone in the breast has continued to be of interest to pathologists. The authors discuss the various hypotheses which have been advanced to explain the origin of these teratoid mixed tumors. Following a review of reports on "giant-cell sarcoma," they take up other types of mammary sarcomas such as liposarcomas, angiosarcomas and leiomyosarcomas. The group of cases which they studied themselves comprised thirty-six sarcomas of various types and one mixed tumor. Twenty-four of the thirty-three cases of fibrosarcomas (73 per cent) had their origin in adenofibromas. The authors think that, genetically and practically, neoplasms of such an origin are properly designated as adenofibrosarcoma. They regard the use of the term "round-cell sarcoma" as antiquated and obsolete. Likewise the employment of the expression "giant-cell sarcoma" is fallacious and misleading and does not serve a practical advantage, as the fundamental pathologic character of the neoplasm is not thereby suggested.

West Virginia Medical Journal, Charleston

35: 493-542 (Nov.) 1939

Surgeon's Responsibility in the Changing World. R. J. Wilkinson, Huntington.—p. 495.
Ocular Motor Anomalies. W. T. Davis, Washington, D. C.—p. 500.
The Problem of Fever. F. R. Whittlesey, Morgantown.—p. 512.
Concentrated Oxygen as Therapeutic Agent. C. W. Mayo, Rochester, Minn.—p. 520.
Immediate Cervical and Perineal Repairs. E. N. Du Puy, Beckley.—p. 525.
Foreign Body (Needle) in Stomach. W. Bronaugh, Parkersburg.—p. 528.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

51: 451-500 (Nov.) 1939

Growth of Epithelium in Tegumentary Tissues: Part II. Metamorphosis of Ectoderm into Epidermis: Follicular Type of Growth Within Epidermis. H. Leslie-Roberts.—p. 451.

British Journal of Ophthalmology, London

23: 697-744 (Nov.) 1939

*Study of Diet in Relation to Health: Dark Adaptation as Index of Adequate Vitamin A Intake: III. Relation of Diet to Rate and Extent of Dark Adaptation. A. M. Thomson, H. D. Griffith, J. R. Mutch, D. M. Lubbock, E. C. Owen and G. Logaras.—p. 697.

Macular Coloboma: Histologic Report. A. Sorsby and J. O. Oliver.—p. 724.

Ophthalmologic Complications of Leontiasis Ossea. S. Philps.—p. 729.

Culture in Vitro of Corpuscles of Trachoma. L. Poleff.—p. 738.

Diet and Dark Adaptation.—Thomson and his collaborators determined the effect of diet on dark adaptation. The subjects were twelve adult members of the medical staff, twelve adolescent boys from an industrial school and twenty-four school children from a poor quarter in Aberdeen. After fifteen minutes in darkness, each subject was tested with the Rowett adaptometer, Mutch-Griffith photometer, the biophotometer and the Birch-Hirschfeld photometer. Tests were made on three consecutive days without vitamin A supplement and again after an interval (from one to eleven days in different cases) during which two capsules of halibut liver oil were given daily. Because of illness, one of the children was not retested after taking vitamin A. Of the forty-eight cases, nineteen were assessed normal and seven subnormal by all methods. Of the forty-seven retested after taking vitamin A, thirty-eight were assessed normal by all methods. The remaining twenty-two in the first test and nine in the second test were each assessed abnormal by one or more methods, but none of them by all four methods. The two tests coming first in the series selected many more subjects as "deficient" than did the Birch-Hirschfeld photometer and biophotometer. This suggested that the length of the period in darkness or dim light prior to the test might be affecting the results. The Rowett adaptometer was used in testing fifty-three adults to determine the standards of dark adaptation to be expected in normal subjects, i. e. subjects who habitually took a diet considered not to be deficient in vitamin A. From the results it was concluded that subjects who were not deficient in vitamin A might be divided into two groups on the basis of "time to aperture 2"; the larger of the groups, 80 per cent, reached that aperture in from seven to fourteen minutes and the distribution about the mean was roughly symmetrical. The other group took longer than fourteen minutes and from the differences in the shape of their curves could be considered as being "anomalous" in some way. Rates of dark adaptation in children on different diets were determined for thirty children whose average daily intake of vitamin A was approximately 3,000 international units, fifty boys from a private boarding school maintained for at least a year previously on a diet containing daily approximately 6,000 international units of the vitamin, and four other groups of children whose diets contained various amounts of vitamin A (1,000, 2,500, 4,500 and 5,000 international units respectively). All the children tested adapted ultimately to aperture 2 illumination. Slower average curves were not associated with lower average vitamin A intakes. Inspection of the data of individuals shows that there is no correspondence between the frequency distributions about the means of the rate of dark adaptation and of vitamin A intake. In the groups receiving supplementary feeding of the vitamin, no improvement in the standard was obtained. The only exception to this was the summer test in the orphanage, where the "fed" group of children did significantly better than the control group. This difference was not maintained six months later. Inspection of the detailed orphanage results shows that the rate of adaptation of certain individuals changed markedly in the six months between the July and January tests. These changes did not correspond to any known change in the diet or environment. The greatest changes were for the better. As a number of these cases were tested twice on each occasion, with excellent agreement between the results, the improvement does not appear to have been due to practice. The authors conclude from their results that neither rate of dark adaptation nor light threshold of the fully dark adapted eye has necessarily a close correlation with intake of vitamin A in the diet. Considerable variation may occur in one individual and between individuals on the same diet. Clinical observations and experiments in vitamin A deficiency have shown that vitamin A and dark adaptation are related, but at least in certain cases the speed and extent of cure of hemeralopia by vitamin A concentrates is subject to considerable variation. The majority of workers believe that the study of dark adaptation can be used as a test for vitamin A deficiency, but until differences in technic and interpretation of results have been resolved it is impossible to be certain how far their recorded observations represent physiologic facts.

British Journal of Radiology, London

12: 601-648 (Nov.) 1939

Radiologic Study of Bone Changes in Hemolytic Anemia and Leukemia in Children. C. G. Teall.—p. 601.

Seriescopy: Its Principles and Applications. G. B. Bush.—p. 611.

Selected Methods of Foreign Body Localization Adaptable to Radiology in Wartime. D. B. McGrigor.—p. 619.

Radium Poisoning: Review of Present Knowledge in Relation to War Risks. J. Read.—p. 632.

Limitations of Kymography. F. Roberts.—p. 638.

Familial Short Esophagus. R. B. Myles.—p. 645.

British Journal of Tuberculosis, London

33: 177-224 (Oct.) 1939

Tuberculous Splenomegaly. L. Howells.—p. 178.

Seasonal Trends in Pulmonary Tuberculosis. C. Clayson.—p. 187.

Review of Seventy-Seven Consecutive Cases of Pulmonary Abscess. A. G. Bryce.—p. 197.

Chronic Ambulant Tuberculous. J. B. McDougall.—p. 206.

British Medical Journal, London

2: 939-982 (Nov. 11) 1939

Anatomic and Physiologic Basis of Physical Training. H. A. Harris.—p. 939.

Sulfapyridine and Pneumococcic Infections. H. L. Marriott.—p. 944.

*Production of Antigonadotropic Activity in Man by Injection of Extract of Pregnant Mare's Serum. I. W. Rowlands and A. W. Spence.—p. 947.

Bronchography. E. J. G. Glass.—p. 950.

Crataegus Oxyacantha in Hypertension. J. D. P. Graham.—p. 951.

Antigonadotropic Activity in Man from Pregnant Mare's Serum.—The formation of inhibitory substances in the blood as the result of prolonged treatment with gonadotropic extracts is likely to set a limit to their use as therapeutic agents. The prolonged administration to human patients of extracts prepared from the urine of pregnant women does not evoke the formation of these substances, but Rowlands and Spence point out that the presence of such inhibitory substances in the blood of man treated with extracts of serums from pregnant mares does not seem to have been demonstrated. They are undoubtedly produced. Therefore to continue treatment after such substances have formed would be futile, as most, if not all, of the extract would be neutralized in the circulation. Until a level of dosage and a method of spacing the injections have been found which will not induce the formation of these inhibitory substances, care must be exercised in the clinical use of extracts of pregnant mare's serum. The authors injected intramuscularly nine patients with undescended testes with a gonadotropic extract prepared from the serum of pregnant mares. Antigonadotropic activity was demonstrable in the serum of these patients after twelve weeks of daily or twice weekly injections of the serum. The antigonadotropic activity developed after from four to six weeks of treatment and subsequently in most cases rose rapidly. The activity was not proportional to the amount of extract that was injected. It usually decreased at the end of treatment but was still present for three months or more—in two cases, however, activity increased for about three weeks after injections were discontinued. The antigonadotropic activity was greater in patients who received injections twice a week. The previous observation of Rowlands (1938) on the specificity of a similar antiserum, raised in rabbits, was confirmed. The human antiserum did not inhibit in immature rats the action of extracts of either the human pituitary or urine of pregnancy. No improvement in the position of the patients' testes was observed during treatment with the mare extract, but in three of six patients subsequently treated with extract of urine of pregnancy satisfactory descent of the testes was obtained.

Edinburgh Medical Journal

46: 669-732 (Nov.) 1939

Surgical Aspects of Treatment of Toxic Goiter: Observations Based on Series of 243 Cases. J. M. Graham.—p. 669.
Debatable Tumors in Human and Animal Pathology: VIII. Melanoma. E. K. Dawson, J. R. M. Innes and W. F. Harvey.—p. 695.
If Health Be Wanting. H. H. Roberts.—p. 717.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

46: 813-940 (Oct.) 1939

Hydatidiform Mole and Chorionepithelioma. A. Brews.—p. 813.
Double Monsters in Light of Recent Biologic Experiments and Investigations Regarding Heredity: Contribution to Problem of Determination of Sex. B. Szendi.—p. 836.
Vaginal Hysterectomy: New Technic, Follow-Up of 500 Consecutive Operations for Hemorrhage. V. B. Green-Armytage.—p. 848.
*Investigation of Cases of Recurrent Abortion and Their Treatment with Progesterone. T. N. MacGregor and C. P. Stewart.—p. 857.
*Complications of Radium Therapy in Cancer of Uterine Cervix. R. G. Maliphant.—p. 873.
Some Factors Bearing on Hemoglobin Level in Pregnancy. G. C. Linder and Patricia J. H. Massey.—p. 885.

Progesterone for Recurrent Abortion.—MacGregor and Stewart used progesterone in the treatment of twenty women who had had two or more previous abortions. Prior to this treatment these women had in all sixty-five pregnancies with only ten live births. In no instance could any cause be found for the recurrent abortions—other, that is, than the hormone deficiency revealed during investigation. Of the twenty-two pregnancies during which progesterone was given there were, on the other hand, only eight which ended in abortion, whereas fourteen resulted in a living child at term. The results are in full agreement with those reported by other workers. The use of progesterone therapy in cases of recurrent abortion appears to be warranted. The author has included in the series as "failures" cases in which treatment was not begun until abortion was actually threatening. He believes that if progesterone had been given early enough the proportion of successes would have been increased further. The majority of the failures occurred early in the investigation, when extremely small doses (1 mg. twice a week) of progesterone were being used. More recently the dose has been increased first to 3 mg. and later to 5 or even 10 and 20 mg. twice a week, with intensive therapy in cases of threatened abortion. Even these doses are surprisingly small to be effective, and there is almost an air of the miraculous about the results reported by various observers on doses which are almost infinitesimal in comparison with the amount of progesterone produced in normal pregnancy. The mode of action of progesterone is obscure, but there is no doubt that its presence in adequate amounts is necessary for the maintenance of pregnancy. The simplest explanation of the action of progesterone therapy in preventing abortion would be that it provides, by replacement, an adequate supply of an essential hormone until, whether by its stimulant action on the placenta or by an independent placental development, the deficiency is compensated from natural sources. It may well be, and indeed it is suggested by many facts, that while a temporary deficiency of progesterone does not in itself necessarily lead to abortion it does make abortion an almost inevitable consequence of slight trauma or strain which would otherwise be without effect. A study of the hormone excretion in normal pregnancy has suggested that the critical period when the corpus luteum secretion decreases and the placenta is becoming a secretory organ is near the ninetieth day of gestation. Abortion generally occurs at this time. In recurrent abortion, however, the critical period may be much earlier, as the hormone excretion may be at a subnormal level at a very early stage. Although an injection of a few milligrams of progesterone represents only part of a normal day's production, it gives for a short time an abnormally high concentration of the hormone in the blood. It is possible that this high concentration, repeated at intervals though not lasting long on each occasion, may provide a sufficient extra stimulus to the developing placenta and so enable it to produce a sufficient amount of hormone.

Complications from Radium Therapy in Cervical Cancer.—Maliphant discusses the complications observed in 650 cases of cervical cancer treated with radium. Therapy was associated with a primary mortality of 2.6 per cent, and the commonest cause of early death was peritonitis. Inflammatory sequels were more common with the cavitary technic of irradiation, for which it is suggested that the employment of a uterine tube is at least partly responsible. Postradiation pyometra occurred in 1.25 per cent, usually in older women. In 1.6 per cent intestinal obstruction developed, as the result in all cases of malignant involvement of the intestine. The incidence of fistulas five years after irradiation was 11 per cent. Their formation was usually a manifestation of advanced disease, and factors which predisposed to its occurrence were an ulcerative lesion, anaplastic histologic pattern, interstitial radium, heavy dosage and repeated treatment. The adoption of the cavitary technic resulted in a substantial decrease in the incidence of fistulas. The risks of radium therapy are small in moderately early cases of cancer, but when the cancer is extensive careful consideration is required.

Lancet, London

2: 969-1012 (Nov. 4) 1939

Future of Cardiac Surgery. L. O'Shaughnessy.—p. 969.
*Bacillus Coli Infection of Urinary Tract: Its Relation to Bowel Function. A. W. D. Leishman.—p. 971.
*Effect of Estrogens on Urinary Volume. E. P. Sharpey-Schafer and I. Schrire.—p. 973.
Neutralization of Action of Heparin by Protamine. E. Jorpes, P. Edman and T. Thaning.—p. 975.
Artificial Pneumoperitoneum in Pulmonary Tuberculosis and Pregnancy. Josephine Barnes.—p. 976.
Angina in Aleukemic Leukemia. J. B. L. Tomlinson.—p. 977.
Analysis of Normal T Wave. A. Hill.—p. 979.
Expectant Treatment of Gas Gangrene. H. A. Brittain.—p. 981.

Bacillus Coli Infection of Urinary Tract.—According to Leishman, the coliform group of organisms is responsible for from 70 to 80 per cent of cases of urinary infection, a fact which is usually explained by the proximity to the urinary tract of the bowel as a reservoir of infection. How the organisms migrate is still far from clear. There is no doubt that the route of infection varies in individual cases. The clinical impression is that bowel dysfunction, especially constipation, is not uncommonly a factor in these cases. The observations here recorded were made in an attempt to establish more definitely whether such relationship does exist or not, and if so what type of bowel irregularity is especially to be incriminated. The first series of cases was a control group to discover whether urine obtained with due precautions from a normal person contains Bacillus coli which can be recovered by urine culture. From all the female subjects specimens of urine were obtained by catheter, the first few cubic centimeters of the sample being rejected as being urethral washings. In male subjects a midstream specimen was used. The culture technic used for these observations allows the detection of coliform organisms even if present in minimal numbers. Further, the author examined the urine of persons with constipation, with persistent loose stools and with temporary diarrhea due to laxatives and finally he searched for Bacillus coli in the urethra of healthy persons. He says that it is difficult to assess the significance of the presence of Bacillus coli in the urine of seven of the 100 control persons. It is to be noted that there was no excess of white blood cells in the centrifuged deposit of the urine of any of these cases, and that of the cases reexamined all were subsequently negative without treatment having been given in the meantime. It is possible that healthy persons excrete coliform organisms in the urine from time to time, and that this slight symptomless bacilluria may develop into a clinical infection if the bodily resistance is lowered or the virulence of the organism increased. However this may be, it is clear that a positive urine culture alone is not necessarily evidence of a clinical infection of the urinary tract with Bacillus coli. The proportion of positive cultures in the series of persons suffering from constipation and in the series given excessive laxatives is so similar to the proportion of positive cultures in the control group that it seems justifiable to conclude that 6.2 per cent of positive cultures is within the limits of normal health. This figure contrasts with nineteen positive cultures obtained from the urines of thirty-six female subjects with persistent loose stools. The absence of positive cultures from the group of male subjects with diarrhea is in striking contrast to the observations in the female subjects. It is suggested that this difference in the two sexes is due to the close

anatomic relation of the anus to the external urethra meatus in the female. The author concludes that persistent loose stools are an etiologic factor in Bacillus coli infections of the urinary tract of female but not of male subjects and that constipation alone is not a factor.

Effect of Estrogens on Urinary Volume.—Sharpey-Schafer and Schrire say that it was recently asserted by Shapiro (1938) that the injection of estrogens into women caused a diminution of urinary volume, and in explanation of these results it was suggested that the estrogens depressed a diuretic principle of the anterior pituitary. In the course of observations on the effect of the injection of large doses of the estrogens on the urinary creatinine of normal subjects, subjects with acromegaly, and castrate and menopausal women, the authors have studied the urinary output and have not detected any change in volume after the injection of estrogens. Since the fluid intake was only roughly controlled in many of these subjects, a more elaborate experiment has been performed. The subjects investigated were all in the hospital at rest in bed. Each subject was put on a rigidly fixed diet. The water and salt content of the diet was known and was suited to each patient's needs. Extra water was measured and kept at a constant daily amount. Great care was taken that the subject took nothing outside the diet. Care was also taken in the collection of urine; mistakes, which were not uncommon, were reported, and the urine for that day was discarded. The twenty-four hour urinary volume was measured by one of the authors. Estrogens were given in the form of estradiol benzoate; 100,000 international benzoate units were injected intramuscularly once daily and the period of injection was ten days. This dose is similar to that used by Shapiro. Fourteen subjects were investigated. After the injection of estrogens no change could be detected in the urinary volume of women before and after the menopause, of castrate women or of men.

Practitioner, London

142: 461-572 (Nov.) 1939

Gastrointestinal Diseases. A. H. Douthwaite.—p. 461.
Diseases of Heart and Blood Vessels. M. Campbell.—p. 474.
Respiratory Diseases. G. Marshall.—p. 484.
Nervous Diseases. M. Critchley.—p. 491.
Tropical Diseases. N. H. Fairley.—p. 496.
Endocrine Therapy. S. L. Simpson.—p. 502.
Orthopedics. G. Perkins.—p. 510.
Rectal Diseases. C. N. Morgan.—p. 515.
Genito-Urinary Diseases. E. W. Riches.—p. 528.
Anesthesia. R. R. Macintosh.—p. 539.
Electrotherapy and Physical Methods of Treatment. A. Eidinow.—p. 550.
Radiotherapy. F. M. Allchin.—p. 555.
Modern Therapeutics: V. Stimulant Drugs. Eleanor M. Scarborough.—p. 561.

Quarterly Journal of Medicine, Oxford

8: 277-384 (Oct.) 1939

Simmonds's Disease Due to Postpartum Necrosis of Anterior Pituitary. H. L. Sheehan.—p. 277.
*Experimental Leukocytosis in Man. N. G. Nordenson.—p. 311.
Atypical Hemolytic Anemias. F. G. Lescher and G. R. Osborn, with technical assistance from J. J. G. Bates.—p. 335.
Nature of Arteriolar Hypertonicity in Acute Glomerulonephritis. W. M. Arnott and G. D. Matthew.—p. 353.
*Study of Some Serum Electrolytes in Hypertension. O. L. V. S. de Wesselow and W. A. R. Thomson.—p. 361.

Experimental Leukocytosis in Man.—Nordenson observed the effects of sodium nucleinate, pentnucleotide and adenine sulfate on the peripheral blood and the bone marrow in fifty-nine experiments on forty-three patients. Experiments with adenine sulfate were meager. The patients were normal subjects with secondary anemias and mild infections without a shift to the left in the Arneth-Schilling count, normal subjects with secondary anemias and mild infections with a shift to the left, patients with severe acute infections without anemia or leukopenia but with a pronounced shift to the left, and patients with pernicious anemia in relapse of remission. In addition, prolonged observations and injections have been carried out on a patient with tuberculosis coxitis showing slight secondary anemia without a shift to the left. The subjects described as normal were average hospital patients suffering from ulcers, cardiac disease with slight failure, arteriosclerosis and various forms of psychosis. The secondary anemias were due to nephritis, cancer, infections, anemia after hemorrhage and some cases of essential hypochromic anemia. Both sodium nucleinate and pentnucleotide induced a continuing peripheral neutrophil leukocytosis, with hastened maturation of the granular cells of the bone marrow, but only if the bone marrow had been damaged previously. If damage to the bone marrow occurred previously, in infections and in the relapses of pernicious anemia, neither of these changes took place. In the few experiments with adenine sulfate no changes in the peripheral blood were observed. Thus as long as the bone marrow had relatively intact stores of myelocytes, peripheral leukocytes were produced and maintained. Otherwise, in severe infections and in relapses of pernicious anemia the alterations in the peripheral blood become aggravated by leukopenia and pronounced shift to the left.

Serum Electrolytes in Hypertension.—De Wesselow and Thomson determined the sodium, potassium and calcium of the serum of patients with hypertension and normal subjects (both groups having been kept on a ward diet for one week before investigation) and the effects, if any, of artificially produced changes of the serum sodium and potassium on the hypertension. With the exception of one instance of malignant hypertension, the subjects studied were unselected and taken as admitted. On the basis of their observations the authors state that such changes as occur in the blood pressure of hypertensive patients from the addition of amounts of potassium and sodium salts to the diet, which would be unlikely to be selected voluntarily by a patient, are relatively insignificant. Broadly speaking, the addition of considerable quantities of sodium to the diet in the form of citrate and chloride produces a rise in the blood pressure of such patients, while the addition of potassium salts produces a fall. Assuming that the raised blood pressure in essential hypertension is dependent on a raised tonus of the peripheral vessels, it is questionable whether the changes observed are necessarily dependent on a change in such tonus. Two other factors must be considered, changes in the blood volume and the possible effect of these two ions on the heart. With sodium dosage the estimations suggest that a definite hemodilution occurs, which is accompanied by a gain in weight, and conversely with potassium such few observations as have been made suggest slight hemoconcentration with loss of weight. Though, in the normal subject, changes in blood volume are readily compensated by corresponding adjustments of the vascular bed, it is possible that these mechanisms are impaired in the hypertensive state. Regarding the force of the cardiac contraction there can be no doubt that in the case of potassium a rise of this ion in the serum is associated with changes in the electrocardiogram suggestive of alterations in ventricular function. This is well shown in the crises of Addison's disease, in which a change in the electrocardiogram, in the shape of an increase in the height of the T wave, is observed. This develops with the accumulation of potassium in the serum. In Addison's disease this alteration in the electrocardiographic complex is not necessarily associated with a fall in the serum sodium, and in the hypertensive patients in whom it was present it developed with a normal serum sodium content. This change in the electrocardiogram is not believed to be associated with any change in the blood pressure. In the rapid changes in the serum potassium and sodium which occur in this disease, a considerable fall in the serum potassium with corresponding changes in the electrocardiogram has been observed, which produced no rise in the blood pressure. Similarly, the variations in serum sodium are only roughly parallel to the height of the blood pressure, though the blood pressure has never been restored to a fully normal level in Addison's disease unless the serum sodium level was above 320 mg. per hundred cubic centimeters. There is no evidence that the slight falls in blood pressure which occurred in the hypertensive patients on potassium medication are due to a central action on the heart, since in Addison's disease the changes in the electrocardiogram due to accumulation of potassium in the blood are not necessarily associated with a fall in pressure. If the possible central action of potassium on the force of the cardiac contraction is ruled out, such small changes in pressure as were observed might be due either to changes in the peripheral tonus or to oligemia. In the case of the sodium salts, no changes in the electrocardiogram were present and therefore there is no indication that such small changes in the serum sodium as were produced exercised any effect on the heart beat.

Revue Belge de Puériculture, Brussels

4: 241-291 (Oct.) 1939

Caution or Realization of Physiologic Potential. F. Hamburger.—p. 241.
*Treatment of Still's Disease by Intramuscular Injections of Milk Preparations. L. Maldague.—p. 246.
Antidiphtheric Prophylaxis in the United States. M. Graffar.—p. 251.

Treatment of Still's Disease.—According to Maldague the prognosis of Still's disease was formerly considered extremely unfavorable, for of about thirty cases reported in the literature cure was effected in only a single one with good health ten years later, whereas all others had a fatal outcome. The author reports three cases of Still's disease. In the first one the symptoms of Still's disease improved following an attack of endocarditis. The author thinks that this improvement was due to the fact that the complicating endocarditis stimulated the defense powers of the organism so that it not only overcame the complication but also improved the primary disease. In order to further stimulate the defense powers the author decided to resort to the injection of milk preparations, milk having often proved effective in acute articular rheumatism. He employed first a sterile milk product from which the unnecessary fats had been removed. Later he used a preparation which in addition to milk contained methenamine and procaine. He believes that the two substances produce equivalent effects. Injected into the muscles of the buttock, they produce no local reactions but elicit an increase in the temperature (between 38 and 39 C., or from 100.4 to 102.2 F.). This febrile attack, which persists for from several hours to two days, is elicited once a week by the injection of from 0.5 to 1.5 cc. of the milk preparation, or from 3 to 5 cc. of the preparation which also contains methenamine and procaine. The total number of injections given the two patients who were completely cured was around twenty. The first one, who was 8½ years of age when first seen by the author, is now 19 and shows normal development. The third patient, who is on the way to recovery, has been given fourteen injections. In view of the otherwise high mortality of Still's disease, he thinks that the cure in the reported cases must be attributed to the treatment rather than to accident. He realizes that it is impossible to speak of percentages of cure on the basis of three cases, but he thinks nevertheless that the aforementioned treatment makes the prognosis of Still's disease more favorable.

Annales Pædiatrici, Basel

153: 297-356 (Sept.) 1939

Origin and Development of Infiltrations in Unifocal (Lobar) Pneumonia. S. Engel.—p. 297.
*Adams-Stokes Syndrome in Nurslings. Beatrice Faessler.—p. 327.
Increased Incidence of Acetonuria. F. Demuth.—p. 349.

Adams-Stokes Syndrome in Nurslings.—Faessler maintains that the Adams-Stokes syndrome is rare in young children, the literature containing reports of only eight cases concerning children less than 2 years of age. Of these eight children four died before they were 3 months old; in some of the others the attacks became rarer and in some they stopped entirely. The clinical or postmortem diagnosis was defective interventricular septum six times, open ductus Botalli once and persisting foramen ovale once. This small number of cases seems to suggest a possible connection between the Adams-Stokes syndrome and a defect in the interventricular septum, but such a connection has not been proved as yet. In two of the cases microscopic studies were made on the muscular conducting system. In both cases an interruption was found in the auriculoventricular connection between the auriculoventricular node and the main bundle; in one case there existed in addition another interruption between the bundle and the left branch. As regards the pathologic anatomic aspects, the description of the earlier cases was incomplete and so the author feels justified in describing a case that she herself observed, which was thoroughly investigated. A boy aged 7½ months, with morbus caeruleus, had the first attack of Adams-Stokes syndrome at the age of 6 months. The pulse rate in the interval between the attacks was from 120 to 140; the electrocardiogram was normal. During the attacks the pulse went down to 22 and the electrocardiogram showed partly auriculoventricular rhythm, partly changing between sinus rhythm and auriculoventricular rhythm, while in all other cases auriculoventricular block was found. The postmortem examination revealed a transposition of the large vessels, a double arch of the aorta, stenosis of the pulmonalis, a subaortal defect in the interventricular septum and an open foramen ovale. The auriculoventricular connecting system was normal. A striking feature was the thickening of the intima in the main artery of the sinus node. In this child the Adams-Stokes attacks can be explained by the fact that the blood supply of the sinus node was so poor during exertion, owing to the narrow lumen of its main artery, that the stimulus formation was greatly slowed down, and that the auriculoventricular node took over the lead. The anoxemia increased on account of the slow frequency of the heart, and lack of oxygen in the brain produced unconsciousness and convulsions.

Archivos Argentinos de Pediatría, Buenos Aires

12: 369-486 (Oct.) 1939. Partial Index

*Rheumatism in Scarlet Fever. F. Bazán and R. Maggi.—p. 376.
Treatment of Rickets with Only a Large Dose of Vitamin D3. J. P. Garrahan and C. Ruiz.—p. 407.
Pneumonia and Bronchopneumonia in Children. P. Depetris.—p. 424.

Rheumatism in Scarlet Fever.—Bazán and Maggi have observed during the last five years a group of 1,550 children of either sex who were suffering from scarlet fever, sixty-eight of whom (forty girls and twenty-eight boys) developed rheumatism. The condition was of the type of simple acute polyarthritis in sixty-three cases, serous arthritis with or without secondary suppuration in four cases and primary suppurative arthritis in one case. Endocarditis was present in seven cases in the group. The authors found that simple acute polyarthritis in the majority of cases is a complication of benign forms of scarlet fever and is of short duration. It may develop with bouts. Serous arthritis with or without suppuration may be of long duration but benign evolution or complicating grave or septic forms of scarlet fever. The outlook in these cases depends on the clinical form of scarlet fever. Primary suppurative arthritis in the majority of cases is fatal. They also found that simple acute polyarthritis and serous arthritis with or without suppuration which develop early in the course of scarlet fever, without any endocardial complications, show articular involvement by the general infection, whereas arthritis which develops late in the course of the disease or in convalescence in the presence of endocarditis shows rheumatic fever which was latent before the development of scarlet fever and entered in evolution in the course of the infection. The treatment of simple acute polyarthritis and of serous arthritis without suppuration consists in administration of sodium salicylate or acetylsalicylic acid. Sodium salicylate is given in daily doses of 0.5 Gm. for each year of age, that is, between 2 and 6 Gm. for children. The drug is well tolerated, has no toxic action on the kidney and has a beneficial action on the heart. Acetylsalicylic acid is given in daily doses of from 0.25 to 1 Gm. in children before the age of 8 and from 1 to 3 Gm. for children between the ages of 8 and 14. Suppurative forms call for surgical intervention.

Lisboa Médica, Lisbon

16: 589-638 (Oct.) 1939. Partial Index

*Acute Abdominal Syndromes of Hypophysial Origin. G. Marañón, C. Richet, A. Pergola and G. Le Sueur.—p. 589.
Maduromycosis of Black Nodules: Autochthonous Case in Portugal. J. Morais Cardoso.—p. 601.

Acute Abdominal Syndromes of Hypophysial Origin.—Marañón and his collaborators call attention to the frequency of acute abdominal syndromes in patients suffering from hypophysial insufficiency. Seven cases are reported. In all cases the insufficiency was shown by the presence of any or several of the following conditions: diabetes insipidus, dyschromia, sexual disorders, increased temperature, progressive thinness, cachexia (or adiposity) and obstinate constipation. The authors found that acute abdominal syndromes of hypophysial origin can be divided, according to their type, into two large groups: those with predominant intestinal paralysis (which simulate ileus paralyticus) and those with predominance of spasm and pain (which simulate acute appendicitis, perforated peptic ulcer, cholecystitis or some other acute abdominal condition). The abdominal symptoms of either the paralytic or the acute abdominal type are controlled in all cases by administration of extracts of the posterior lobe of the hypophysis. Discontinuation of the treatment frequently results in reappearance of the symptoms. The authors believe that the abdominal symptoms of the para-

lytic type are due to absence (or diminution) of the hormone of the posterior lobe of the hypophysis with consequent development of intestinal paralysis, whereas those of the type of acute abdominal conditions are due to absence (or diminution) of either parathyrotropic or adrenotropic hormones with consequent parathyroid or adrenal insufficiency. The authors point out the importance of a differential diagnosis between acute abdominal syndromes of hypophysial and of nonhypophysial origin, especially because of the fact that the lack of a proper diagnosis may bring patients who are suffering from abdominal syndromes of hypophysial origin to unnecessary useless surgical intervention.

Deutsche Zeitschrift für Chirurgie, Berlin

252: 449-548 (Sept. 13) 1939. Partial Index

Pneumatocele of Frontal Lobe with Secondary Perforation into a Ventricle. H. Killian.—p. 449.
*Experimental Contribution to Transfusion of Conserved Blood. H. Knoll. —p. 463.
Roentgenologic Observations on Capsule of Knee Joint with Aid of Opaque Suspension. H. R. Paas.—p. 478.
Surgical Significance of Accessory Inferior Lobe. A. Brunner.—p. 499.
Correction of Cleft Nose Deformity. E. Eitner.—p. 507.
Treatment of Coxa Vara Epiphysaria of Adolescents. O. Voss.—p. 511.

Transfusion of Conserved Blood.—Knoll studied the chemical and morphologic characteristics of conserved blood to which was added heparin, pure citrate and citrate in combination with salts and with dextrose. The pure citrate solution and the citrate-dextrose solution proved to be the best stabilizers. The author found that faultless aseptic technic in drawing and storing the blood is essential to its preservation. The least significant infection causes an early hemolysis, since the conserved blood does not possess the same bactericidal properties as the circulating blood. The blood is best preserved at a temperature of 4 C. The alterations in the blood progress with the duration of storing. It undergoes both chemical and morphologic changes. The chemical changes consist of the breaking down of the sugars and of hemolysis. The latter may reach a degree that would constitute a hazard for the recipient. The hemolysis is accompanied by a rise in potassium and bilirubin content of the serum and in a rearrangement of the albumin-globulin component so as to favor the globulins. There results a hemolytic discoloration of the serum. The fragility of the erythrocytes increases and is followed by a drop in the erythrocyte count. The leukocytes disappear rapidly. The blood platelets behave in the citrate blood much like the leukocytes. They disappear completely in the shortest time in the blood to which heparin has been added. Blood may be preserved in a citrate or, still better, in a citrate-dextrose solution for as long as three weeks without undergoing appreciable hemolysis.

Geburtshilfe und Frauenheilkunde, Leipzig

1: 593-628 (Sept.) 1939

Modification of Development and Growth of Thyroid of Fetus in Utero. H. Guggisberg.—p. 593.
*Therapeutic Application of Artificial Estrogenic Substances. J. Varangot. —p. 603.
Systematic Pendulation of Maternal Symphysis and Traction on Fetal Head. R. Kuehel.—p. 611.
Leukorrhea in Hypofunction of Parathyroids and Allergic Diseases. H. Geiger.—p. 617.

Therapy with Artificial Estrogenic Substances.—Varangot used diethylstilbestrol for the treatment of disturbances, following the abolishment of the ovarian function, in eighteen women, seventeen of whom had undergone castration and one of whom had been in the menopause for twelve years. Eleven of these women had been treated previously with estradiol benzoate or testosterone propionate. Before diethylstilbestrol was given, treatment had been interrupted long enough to permit recurrence of the symptoms of castration. All these women were given tablets but no injections. The doses required varied in accordance with the type and intensity of the disturbances and with the sensitivity of the patients. However, the continuous administration of 2 mg. each day counteracted the most severe disturbances. The author also reviews the results which other investigators obtained with diethylstilbestrol in amenorrhea. Since diethylstilbestrol has all the characteristics of natural estrone and since in oral medication it is active in small doses, it seemed logical to substitute it for estradiol benzoate in the therapeutic armamentarium of the gynecologist. However, the clinical use of diethylstilbestrol demonstrated that the doses required for effective treatment are frequently toxic. The author observed that it caused early and late disturbances. He gained the impression that the early signs of intolerance are due to hepatic damage and that the late impairments are due to the toxic effects of diethylstilbestrol on the gastric mucosa. He further describes his experiences with dihydroxydiphenylhexane. This substance, which in animals exerts the same estrogenic action as does diethylstilbestrol, was used by him in twenty-five women. He found that dihydroxydiphenylhexane causes the same early disturbances as does diethylstilbestrol but that late disorders are apparently less frequent. In view of the fact that both substances cause toxic effects, it seems probable that the dihydroxydiphenyl component (which the two have in common) and not the hydrocarbon chains causes the toxic effects. In employing dihydroxyphenylhexane for the prevention of lactation, the author observed an unusually high tolerance in that only one of ten women showed mild signs of intolerance. He is unable to give a satisfactory explanation of this increased tolerance during the postpartum period. In the concluding summary he emphasizes once more that the toxic effects are elicited by therapeutic doses and that after castration the therapy with estrogenic substances is merely a substitutional therapy and must therefore be continued for years.

Strahlentherapie, Berlin

66: 1-184 (Sept. 25) 1939. Partial Index

Experimental Investigations on Relations of Nicotinic Acid Amide to Porphyrin Metabolism and to Action of Light. W. W. Kühnau.—p. 24.
Treatment of Deep Infiltrating Cancers with Short Distance Roentgen Irradiation. H. Chaoul and K. Greineder.—p. 73.
New Results of Short Distance Roentgen Irradiation of Malignant Melanoma. K. Greineder and W. Neumann.—p. 89.
Short Distance Roentgen Irradiation in Induratio Penis Plastica. W. Knierer.—p. 143.
*Prevention of Leukopenia in Roentgen Irradiation. C. Carrié and O. Schnettler.—p. 149.

Prevention of Leukopenia in Roentgen Irradiation.—Carrié and Schnettler made experiments on rabbits. These animal experiments confirmed Carrié's previous observations on the favorable effect of vitamin C on the roentgen leukopenia. It was found that large doses of vitamin C produce a leukocytosis in rabbits. Moreover, irradiation leukopenia could be improved by the administration of vitamin C. The administration of vitamin C before the irradiation has the most favorable effect on the leukocyte count after roentgen irradiations and the authors recommend this prophylactic administration as the medication of choice.

Wiener Archiv für innere Medizin, Vienna

33: 81-144 (Oct. 10) 1939

Involvement of Kidney in Diabetes Mellitus. H. Dibold and H. Reimann.—p. 81.
Experiences with Sternal Puncture. R. Singer.—p. 97.
*Coagulability of Cerebrospinal Fluid by Heat and Its Diagnostic Significance. M. Bock, G. Lennmen and H. Roerger.—p. 113.
Weight of Thyroid in Swiss Population: Contribution to Endemiology of Struma. W. Risch.—p. 127.

Coagulability of Cerebrospinal Fluid.—According to Bock and his associates the phenomenon of heat coagulation of protein bodies has not been fully explained as yet, but among the numerous factors which play a part the following deserve special attention: 1. A certain number of electrolytes in solution is necessary to effect heat coagulation; the lowest concentration which permits the development of concentration is designated as "electrolyte threshold." 2. The protein bodies must be present in a certain concentration; if this "suspension threshold" is not reached, visible flocculation does not take place. On the basis of these observations, Weltmann developed the method which he designates as "coagulation band." In this method a constant dilution of serum (fifty fold) is combined with arithmetically graduated concentrations of calcium chloride. The favorable diagnostic results that were obtained with Weltmann's heat coagulation test led to attempts with "heat coagulation of the cerebrospinal fluid." The heat coagulation of the cerebrospinal fluid determines (1) that number of test tubes of a series of concentrations of calcium chloride in which coagulation is perceptible and (2) the intensity of this flocculation and of the simultaneously observed turbidity. The series of calcium chloride solutions used for the heat coagulation test is as fol-

114
940

lows: 5, 3.75, 2.5, 1.5, 1, 0.75, 0.5, 0.25 and 0.05 per cent. To 1 cc. of each of these solutions is added 0.4 cc. of cerebrospinal fluid. After cooking for fifteen minutes, the result is read. The authors describe the various intensities of flocculation and say that the flocculation curves are differentiated into normal, doubtful to weak positive and positive types. They further determined whether under the conditions of the heat coagulation the determination of the electrolyte threshold was possible and of diagnostic value. They found a "refined" series with decreasing concentrations from 0.125 to 0.05 per cent of calcium chloride suitable for this purpose. Each of the sixteen tubes of the refined series differed by 0.05 per cent. The refined series has the disadvantage that comparatively large quantities of cerebrospinal fluid are required. Nevertheless, the authors employed it in thirty-eight cases and to a certain extent found it practical. Further they summarize the diagnostic value of the heat coagulation on the basis of 120 tests. The sugar and sodium chloride contents of the cerebrospinal fluid showed no parallelism to the outcome of the heat coagulation test. In all spinal fluids in which the coagulation test gave definitely pathologic curves the cell count and Pandy's reaction also indicated pathologic conditions and Nonne's reaction did so in the majority of cases. Thus the heat coagulation test corroborates the fact that pathologic changes exist in the spinal fluid. The intensity of the flocculation and the number of test tubes in which it is observable are a measure of the severity of the changes in the cerebrospinal fluid. In cases in which only the cell count is slightly increased the pathologic outcome of the heat coagulation test may be of value, for in these cases it is slightly more sensitive than the other protein reactions.

Sovetskiy Vrachebnyy Zhurnal, Leningrad

Aug. 15, 1939 (No. 15) Pp. 769-816. Partial Index

Regarding Homeopathy. M. V. Chernorutskiy.—p. 769.
Dynamics of Venous Pressure in Tuberculous Patients. A. Ya. Tsigelnik and S. P. Gefter.—p. 775.
*Simple and Accessible Method of Investigating Dysphagia. G. S. Belenkiy.—p. 785.
Neurotic Component in Pathogenesis and Therapy of Polyarthritis. O. I. Solntseva.—p. 789.

Simple Method of Diagnosing Dysphagia.—Belenkiy emphasizes the inadequacy of the anamnesis and of the subjective symptoms for the differential diagnosis of the nervous spastic and the organic dysphagia. The x-ray method of investigation is to be employed first, since it is capable of revealing false passages, diverticula, aortic aneurysms and inflammatory conditions of the mediastinum—conditions which constitute contraindications to the methods of investigation by the passage of sounds, bougies and the esophagoscope. The early stages of neoplastic, ulcerative or inflammatory processes may escape the x-ray investigation but may be readily discovered with the aid of the esophagoscope. The method, however, works hardships on the patient and is not to be recommended for use by the general practitioner. The author proposes for the use of the general practitioner an auscultatory method of differentiation between a functional spastic and organic disease of the esophagus. The method takes advantage of the fact established by roentgenologists that the time required by the second phase of deglutition, that of the passage of food through the esophagus and the cardia, amounts to from two to ten seconds. Meltzer had established that auscultation at the base of the xiphoid cartilage yields two tones following the swallowing of fluid. The first is caused by the contraction of muscles of deglutition, the second louder and longer sound by the passage of fluid through the cardia. The time interval between the two corresponds to the arrest of food or fluid above the closed cardia and consumes from six to seven seconds. Retardation to from twelve to twenty seconds was considered of diagnostic value by Ewald. The author studied the "tonal phenomenon" of twenty-five normal persons. Distinct and constant sounds were heard best when from 20 to 25 cc. of water at room temperature was swallowed. The patient is asked, in addition, to go through the act of deglutition four times at one minute intervals. A study of sixty patients demonstrated the absence of the second sound when the cardia is impassable because of a neoplasm. The author was able to establish two types of a "phonogram," normal and stenotic. The normal consists of a short first sound followed from six to eight seconds later by a somewhat longer sound. Repeated tests of the same person give constant results. The stenotic phonogram is characterized by a prolongation of the interval to from twelve to fifteen seconds as well as by irregular retardation following the supplementary deglutitions. The latter are due to spastic contractions of a neurogenic type above an obstruction of organic character. In dysphagias on a nervous functional basis the retardation of the second sound in less pronounced.

Acta Medica Scandinavica, Stockholm

102: 277-448 (Nov. 4) 1939. Partial Index

Symptomatic Sprue. H. A. Salvesen and M. Kobro.—p. 277.
Clinical Aspects of Various Types of Congenital Cystic Lungs in Adults. T. Bruce.—p. 295.
Pneumonia in Adults and Children Treated with 2(Para-Aminobenzenesulphonamido) Pyridine. A. Eldahl.—p. 324.
*Experimental Investigations on Hodgkin's Disease (Gordon's Test). H. Schreiber.—p. 357.
Increasing Citrate Metabolism in Vitro by Salicylic Acid. N. Alwall.—p. 390.
Treatment of Bronchial Asthma by Aero-Ionotherapy. A. L. Tchijevsky.—p. 396.
*Creatinuria in Thyrotoxicosis. K. Brøchner-Mortensen and E. Møller.—p. 417.

Experimental Investigations on Hodgkin's Disease.—Schreiber made studies in five cases of Hodgkin's disease. In only two of the five cases was Gordon's test positive, and in these two cases the test was atypical in that the symptoms which developed in the rabbits differed considerably from those described by Gordon. In one of the positive cases the course was mitigated and in the other one it was peracute. The fact that in three of five cases the results of the tests were negative seems to indicate that it has no diagnostic significance; however, the convincing results obtained by other investigators suggested to the author that accident played a part in this small series of negative results. He reaches the conclusion that only the positive outcome of the test is reliable. The positive outcome of Gordon's test has its greatest diagnostic significance in incipient cases of Hodgkin's disease in which the histologic diagnosis is as yet impossible. The negative outcome of Gordon's test makes the absence of Hodgkin's disease only probable but not certain. If in suspected cases Gordon's test is negative, it should be repeated on a larger number of animals. If possible, lymph nodes with an earlier stage of the disease should be used for examination.

Creatinuria in Thyrotoxicosis.—Brøchner-Mortensen and Møller point out that creatinuria appears in various disorders, such as reduced or abolished testicular or ovarian function, disorders giving rise to changes in the musculature, carcinoma, hepatic cirrhosis, cardiac insufficiency, diabetes mellitus and thyrotoxicosis. Shaffer in 1907 demonstrated that many patients with exophthalmic goiter excreted considerable quantitites of creatine in the urine, while the creatinine excretion was at the same time rather low. This observation was later substantiated by numerous authors. In patients with myxedema the urine generally does not contain creatine, but thyroid treatment gives rise to creatinuria, which in the majority of cases appears before the increase in the basal metabolic rate. Thyroid treatment of normal persons likewise elicits a considerable creatinuria. The authors report the results of examination in thirty-nine cases of exophthalmic goiter and in twelve cases of thyrotoxic adenoma. In these fifty-one cases of thyrotoxicosis they found no proportionality between the basal metabolic rate and the amount of creatine and creatinine in the urine. Prior to iodine treatment an increased creatine excretion was found in twenty-five of forty-one cases. After iodine treatment a decrease in the creatinuria was found in nine of forty cases. During one or several periods of roentgen treatment of thirteen patients no change was found in the creatinuria. During the time immediately after subtotal strumectomy the creatine excretion was found to be of the same magnitude as prior to the operation. The authors conclude that the determination of the amount of creatine and creatinine in the urine has no practical importance in the clinical examination of patients with thyrotoxicosis.

CORRECTION

Cysteine Hydrochloride.—In the Dec. 16, 1939, issue of THE JOURNAL, page 2268, the word "cysteine," in an abstract of an article by Putnam and Hoefer, from the *American Journal of the Medical Sciences*, was inadvertently spelled "cystine."